

BIDDING DOCUMENT

Procurement of Goods and Services

ONLY KOREAN COMPANIES

Competitive Bidding No:

N 001-2018 – EMPLOYER

**“Supplies, Installation, Training and Commissioning of Off-Grid
Photovoltaic Systems in Rural Areas”**

Project:

RENEWABLE ENERGY DEVELOPMENT PROJECT IN RURAL AREAS

Institution:

MINISTRY OF ENERGY AND MINES

(EMPLOYER)

Country:

NICARAGUA

October, 2018

Standard Procurement Document

Summary

Specific Procurement Notice

Specific Procurement Notice - Request for Bids (RFB)

The template attached is the Specific Procurement Notice for Request for Bids without prequalification. This is the template to be used by the Employer.

Bidding Document: Request for Bids - Plant (Design, Supply and Installation) (Without Prequalification)

PART 1 – BIDDING PROCEDURES

Section I - Instructions to Bidders (ITB)

This Section provides relevant information to help Bidders prepare their Bids. Information is also provided on the submission, opening, and evaluation of Bids and on the award of Contracts. **Section I contains provisions that are to be used without modification.**

Section II - Bid Data Sheet (BDS)

This Section consists of provisions that are specific to each procurement and that supplement the information or requirements included in Section I, Instructions to Bidders.

Section III - Evaluation and Qualification Criteria

This Section specifies the criteria to determine the Most Advantageous Bid. The Most Advantageous Bid is the Bid of the Bidder that meets the qualification criteria and whose Bid has been determined to be:

- (a) substantially responsive to the bidding document, and
- (b) the lowest evaluated cost.

Section IV - Bidding Forms

This Section includes the forms to be completed and submitted by the Bidder as part of its Bid.

Section V - Eligible Countries

This Section contains information regarding eligible countries.

Section VI - Fraud and Corruption -

This section includes the Fraud and Corruption provisions which apply to this Bidding process.

PART 2 – EMPLOYER’S REQUIREMENTS

Section VII - Employer’s Requirements

This Section contains the Specification, the Drawings, and supplementary information that describe the Plant and Installation Services to be procured.

PART 3 – CONDITIONS OF CONTRACT AND CONTRACT FORMS

Section VIII - General Conditions of Contract (GCC)

This Section contains the general clauses to be applied in all contracts. **The text of the clauses in this Section shall not be modified.**

Section IX - Particular Conditions of Contract (PCC)

This Section consists of Part A, Contract Data which contains data, and Part B, Specific Provisions that contains clauses specific to each contract. The contents of this Section modify or supplement the General Conditions and shall be prepared by the Employer.

Section X - Contract Forms

This Section contains the Letter of Acceptance, Contract Agreement and other relevant forms.

Invitation for Bids (IFB)

Design, Supply and Installation

Employer: *Ministry of Energy and Mines*

Project: *Renewable Energy Development Project In Rural Areas*

Contract title: *"Supplies, Installation, Training and Commissioning of Off-Grid Photovoltaic Systems in Rural Areas"*

Country: *Nicaragua*

Loan No.: *NIC-9*

RFB No: *MEM-01-2018*

Issued on: *Nicaragua, Central America*

1. The Ministry of Energy and Mines has received financing from the EDCF toward the cost of the RENEWABLE ENERGY DEVELOPMENT PROJECT IN RURAL AREAS, and intends to apply part of the proceeds toward payments under the Contract¹ for "Supplies, Installation, Training and Commissioning of Off-Grid Photovoltaic Systems in Rural Areas". For this contract, the Borrower shall process the payments using the Direct Payment disbursement method, as defined in Disbursement Procedures under the EDCF Loan except for those payments, which the contract provides to be made through letter of credit.
2. The Ministry of Energy and Mines now invites sealed Bids from eligible Bidders for "Supplies, Installation, Training and Commissioning of Off-Grid Photovoltaic Systems in Rural Areas" which consists of the implementation of 10,522 individual and group photovoltaic solar systems to supply electricity to 108 communities in 09 municipalities of the Autonomous Region of the North Caribbean Coast (RACCN), the Autonomous Region of the South Caribbean Coast (RACCS) and the Department of Rio San Juan.

The beneficiaries will correspond to 10,172 homes, 164 schools, 164 community centers and 22 health posts to benefit a total of 62,137 people.

3. Bidding will be conducted through competitive procurement using a Request for Bids (RFB) as specified in the EDCF's "Guideline for Procurement under EDCF Loans" and is open to all eligible Bidders that meet the following minimum qualification criteria.
 - (a) Bidders must have the nationality of the Republic of Korea.
 - (b) The Bidder's minimum average annual turnover should be more than or equal to US\$ 20 Million for the last three (3) years.

¹ Substitute "contracts" where Bids are called concurrently for multiple contracts. Add a new para. 3 and renumber paras 3 - 8 as follows: "Bidders may Bid for one or several contracts, as further defined in the bidding document. Bidders wishing to offer discounts in case they are awarded more than one contract will be allowed to do so provided those discounts are included in the Letter of Bid."

- (c) The Bidder (Single entity or a leading firm of JVA) must have experience of at least one (1) single PV EPC contract (successfully completed within recent ten (10) years prior to the submission date of this bid) amounting to equal to or more than US\$3 million.
4. Interested eligible Bidders may obtain further information from Ministry of Energy and Mines, Mrs. Mayra Barrera, Acquisition Division Chief and inspect the bidding document during office from 8:00 to 16:00 hrs, from October 12th to 31th, 2018; at the address given below Edificio Vista Development, FODIEN Meeting Room, Second Floor, Villa Fontana, Managua².
 5. The bidding document in English may be purchased by interested eligible Bidders upon the submission of a written application to the address below and upon payment of a nonrefundable fee of US\$500. The method of payment will be bank transfer.³ The document will be sent by download file of the MEM server.⁴
 6. Bids must be delivered to the address below *Edificio Vista Development, FODIEN Meeting Room, Second Floor, Villa Fontana, Managua*,⁵ on or before Monday, November 26th, 2018 at 14:00. Electronic bidding *will not* be permitted. Late Bids will be rejected. Bids will be publicly opened in the presence of the Bidders' designated representatives and anyone who chooses to attend at the address indicated below.
 7. All Bids must be accompanied by a *Bid Security of US\$300,000.00*.
 8. Attention is drawn to the Procurement Regulations requiring the Borrower to disclose information on the successful bidder's beneficial ownership, as part of the Contract Award Notice, using the Beneficial Ownership Disclosure Form as included in the bidding document.
 9. The address (es) referred to above is (are):
Mrs. Mayra Barrera
Acquisition Division Chief
Edificio Vista Development,
FODIEN Meeting Room, Second Floor,
Villa Fontana, Managua
mayra.barrera@mem.gob.ni
<http://www.mem.gob.ni>
Tel: (505) 2252-7400, (505) 2252-7500

NB: Bidders shall be required to submit "Declaration of Participation in Economic Development Cooperation Fund(EDCF) Financed Projects" with their bids in the format provided in the bidding document. The Original

² The office for inquiry and issuance of the bidding document and that for Bid submission may or may not be the same.

³ For example, cashier's check, direct deposit to specified account number, etc.

⁴ The delivery procedure is usually airmail for overseas delivery and surface mail or courier for local delivery. If urgency or security dictates, courier services may be required for overseas delivery. With the agreement of the EDCF, documents may be distributed by e-mail, downloading from an authorized web site(s) or electronic procurement system.

⁵ Substitute the address for Bid submission if it is different from address for inquiry and issuance of the bidding document.

signed “Declaration of Participation in Economic Development Cooperation Fund(EDCF) Financed Projects” in the bid document must be delivered to the Export-Import Bank of Korea, 38 Eunhaengno (16-1 Yeouido-dong), Yeongdeungpo-gu, Seoul, Korea 07242, KOREA by mail or in person at or before the deadline for bid submission in the BDS and one copy of the original signed form must be submitted to Employer along with the Bid with the submission of the bid.

Eng. Salvador Mansell Castrillo

Minister of Energy and Mines

Managua, Nicaragua.

Standard Procurement Document

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PART 1 – Bidding Procedures

Section I - Instructions to Bidders

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Abbreviations

MEM	Ministry of Energy and Mines
MHCP	Ministry of Finance and Public Investment
RACCN	Caribbean Coast Autonomous North Region
RACCS	Caribbean Coast Autonomous South Region
BDS	Bid Data Sheet
CB.....	Competitive Bidding EDCF.....Economic Development Cooperation Fund ELI
EXP.....	Experience Form
FIN.....	Financial Data Form
GCC.....	General Conditions of Contract
IFB	Invitation for Bids
ITB.....	Instructions to Bidders
JVA.....	Joint Venture or Association/Consortium
LIT.....	Pending Litigation Form
PCC	Particular Conditions of Contract
SBD	Standard Bidding Document

Glossary

The Bank	The Export-Import Bank of Korea, which has been entrusted by the Government of the Republic of Korea with the operation and management of the EDCF
Borrower	The party to the Loan Agreement to which the Bank has agreed to make the Loan
Contractor	The legal entity that is party to and performs a works contract, the other party to the contract being the “Employer.”
EDCF	The Economic Development Cooperation Fund which is the fund established by the government of the Republic of Korea under the Economic Development Cooperation Fund Act of the Republic of Korea
Employer	One of the two parties to a works contract, the other party being the “Contractor.”
Joint Venture	An association of firms that pool their resources and skills to undertake a large or complex contract in the role of “Contractor,” with all firms (partners in the JVA) being legally liable, jointly and severally, for the execution of the contract in the event of a partner’s withdrawal.
Korean Won	Korea Won or the sign “₩” means the lawful currency of the Republic of Korea.
Loan	The Loan provided for in the Loan Agreement
Management	A firm, acting in the role of “Contractor,” that does not normally

Contractor Perform contract construction work directly, but manages the work of other (sub)contractors, while bearing full responsibility and risk for price, quality, and timely performance of the works contract.

Nominated An enterprise selected and retained by the Employer to provide

Subcontractor A prespecified item in the Bill of Quantities and nominated as subcontractor to the main Contractor for such purpose.

Specialist A specialist enterprise engaged for highly specialized processes

Subcontractors Such as chemical grouting or underwater repair work which cannot be provided by the main Contractor.

Section I - Instructions to Bidders

A. General

- 1. Scope of Bid**

 - 1.1 In connection with the Specific Procurement Notice - Request for Bids (RFB), specified in the Bid Data Sheet (BDS), the Employer, as specified **in the BDS**, issues this bidding document for the Design, Supply and Installation of Plant as specified in Section VII, Employer's Requirements. The name, identification and number of lots (contracts) of this RFB are specified **in the BDS**.
 - 1.2 Throughout this bidding document:

 - (a) the term "in writing" means communicated in written form (e.g. by mail, e-mail, fax, including if specified **in the BDS**, distributed or received through the electronic-procurement system used by the Employer) with proof of receipt;
 - (b) if the context so requires, "singular" means "plural" and vice versa; and
 - (c) "Day" means calendar day, unless otherwise specified as "Business Day." A Business Day is any day that is an official working day of the Borrower. It excludes the Borrower's official public holidays.
- 2. Source of Funds**

 - 2.1 The Borrower or Recipient (hereinafter called "Borrower") indicated **in the BDS** has applied for or received financing (hereinafter called "funds") from the Korea EXIM Bank (hereinafter called "the Bank") in an amount specified **in BDS**, toward the project named **in BDS**. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this bidding document is issued.
 - 2.2 Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank in accordance with the terms and conditions of the Loan (or other financing) Agreement. The Loan (or other financing) Agreement prohibits a withdrawal from the loan account for the purpose of any payment to persons or entities, or for any import of goods, equipment, plant, or materials, if such payment or import is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the proceeds of the Loan (or other financing).

3. Fraud and Corruption

- 3.1 It is the Bank's policy to require that Borrowers (including beneficiaries of EDCF Loans), as well as bidders, suppliers, and contractors under contracts financed by EDCF Loans, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Bank:
 - 3.1.1 defines, for the purposes of this provision, the terms set forth below as follows:
 - 3.1.1.1 "corrupt practice" means the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution; and
 - 3.1.1.2 "fraudulent practice" means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract
 - 3.1.2 will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
 - 3.1.3 will declare a firm ineligible, for a period determined by the Bank, to be awarded a contract financed by an EDCF Loan if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract financed by an EDCF Loan
- 3.2 Bidders (including all parties / partners and the Representative in case of JVA) shall submit the original signed form (with certificate of corporate seal registration) of the "Declaration of participation in Economic Development Cooperation Fund (EDCF) financed projects" as attached in Section VI (Fraud and Corruption) to the Bank (see the address specified in the BDS) by mail or in person at or before the Deadline for bid submission in the BDS and submit a copy of the original signed form to the Employer along with the Bid upon the submission of the Bid. Bidders who fail to submit the original signed form to the Bank and to include the copy of it in the Bid, as set forth above, shall not be substantially responsive subject to ITB Clause 30.

4. Eligible Bidders

- 4.1 Bidder may be a natural person, private entity, government-owned entity - subject to ITB 4.5 - or any combination of such entities in the form of a joint venture or association/consortium (JVA) under an existing agreement or with the intent to enter into

such an agreement supported by a letter of intent. In the case of a Joint venture or association:

- 4.1.1 Unless otherwise specified in the BDS, all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms, and
- 4.1.2 the JVA shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JVA during the bidding process and, in the event the JVA is awarded the Contract, during contract execution.
- 4.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of any country as defined under the Guidelines; Guidelines for Procurement under the EDCF Loan (hereinafter referred to as the Guidelines), subject to the restrictions specified in Section V (Eligible Countries). A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, incorporated, or registered and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract including related Services.
- 4.3 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if;
 - 4.3.1 they have controlling partners in common; or
 - 4.3.2 they receive or have received any direct or indirect subsidy from any of them; or
 - 4.3.3 they have the same legal representative for purposes of this bid; or
 - 4.3.4 they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder, or influence the decisions of the Purchaser regarding this bidding process; or
 - 4.3.5 a Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the party is

involved. However, this does not limit the inclusion of the same subcontractor in more than one bid; or

4.3.6 a Bidder participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the bid:

4.3.7 a Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the contract.

4.4 A Bidder that has been determined to be ineligible by the Bank in relation to the Bank's Guidelines on preventing and combating Fraud and Corruption in projects financed by EDCF loan, shall not be eligible to be awarded a contract.

4.5 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.

4.6 Bidders shall be excluded if the Borrower's country prohibits any import of goods or contracting of Works or services from that country or any payments to persons or entities in that country.

5. Eligible Plant and Installation Services

5.1 The Plant and Installation Services to be supplied under the Contract and financed by the Bank may have their origin in any country in accordance with Section V, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment and services.

5.2 For purposes of ITB 5.1 above, "origin" means the place where the plant, or component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Plant components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

B. Contents of Bidding Document

6. Sections of Bidding Document

6.1 The bidding document consists of Parts 1, 2, and 3, which include all the sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB 8.

- Request for Bid (RFB)

PART 1. Bidding Procedures

- Section I - Instructions to Bidders (ITB)
- Section II - Bid Data Sheet (BDS)
- Section III - Evaluation and Qualification Criteria
- Section IV - Bidding Forms
- Section V - Eligible Countries
- Section VI - Fraud and Corruption

PART 2. Employer's Requirements

- Section VII -Employer's Requirements

PART 3. Conditions of Contract and Contract Forms

- Section VIII - General Conditions of Contract (GCC)
- Section IX -Particular Conditions of Contract (PCC)
- Section X -Contract Forms

- 6.2 The Specific Procurement Notice-Request for Bids (RFB) issued by the Employer is not part of the bidding document.
- 6.3 Unless obtained directly from the Employer, the Employer is not responsible for the completeness of the document, responses to requests for clarification, the Minutes of the pre-Bid meeting (if any), or Addenda to the bidding document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer shall prevail.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding document and to furnish with its Bid all information or documentation as is required by the bidding document.

**7. Clarification of
Bidding
Document, Site
Visit, Pre-Bid
Meeting**

- 7.1 A Bidder requiring any clarification of the bidding document shall contact the Employer in writing at the Employer's address indicated **in the BDS** or raise his enquiries during the pre-Bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received prior to the deadline for submission of Bids within a period specified **in the BDS**. The Employer shall forward copies of its response to all Bidders who have acquired the bidding document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. If so specified **in the BDS**, the Employer shall also promptly publish its response at the web page identified **in the BDS**. Should the clarification result in changes to the essential elements of the

bidding document, the Employer shall amend the bidding document following the procedure under ITB 8 and ITB 23.2.

- 7.2 The Bidder is advised to visit and examine the site where the plant is to be installed and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a Contract for the provision of Plant and Installation Services. The costs of visiting the site shall be at the Bidder's own expense.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 7.4 If so specified **in the BDS**, the Bidder's designated representative is invited to attend a pre-Bid meeting and/or a site visit. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested to submit any questions in writing, to reach the Employer not later than one week before the meeting.
- 7.6 Minutes of the pre-Bid meeting, including the text of the questions raised without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the bidding document in accordance with ITB 6.3. If so specified **in the BDS**, the Employer shall also promptly publish the Minutes of the pre-Bid meeting at the web page identified **in the BDS**. Any modification to the bidding document that may become necessary as a result of the pre-Bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to ITB 8 and not through the minutes of the pre-Bid meeting. Nonattendance at the pre-Bid meeting will not be a cause for disqualification of a Bidder.

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| 8. Amendment of Bidding Document | <p>8.1 At any time prior to the deadline for submission of Bids, the Employer may amend the bidding document by issuing addenda.</p> <p>8.2 Any addendum issued shall be part of the bidding document and shall be communicated in writing to all who have obtained the bidding document from the Employer in accordance with ITB 6.3. The Employer shall also promptly publish the addendum on the Employer's web page in accordance with ITB 7.1.</p> <p>8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of bids, pursuant to ITB 23.2.</p> |
|---|--|

C. Preparation of Bids

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|---|---|
| 9. Cost of Bidding | 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process. |
| 10. Language of Bid | 10.1 The Bid, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the Employer, shall be written in the language specified in the BDS . Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the BDS , in which case, for purposes of interpretation of the Bid, such translation shall govern. |
| 11. Documents Comprising the Bid | 11.1 The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Offer and the other the Financial Offer, both envelopes enclosed together in an outer single envelope. The Bid shall comprise the following: |

Envelop 1 – Technical Offer

- (a) Letter of Technical Bid
- (b) **Bid Security or Bid Securing Declaration**, in accordance with ITB 20;
- (c) **Alternative Bid**, if permissible, in accordance with ITB 13;
- (d) **Authorization**: written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 21.3;

- (e) **Eligibility of Plant and Installation Services:** documentary evidence established in accordance with ITB 14.1 that the Plant and Installation Services offered by the Bidder in its Bid or in any alternative Bid, if permitted, are eligible;
- (f) **Bidder's Eligibility and Qualifications:** documentary evidence in accordance with ITB 15.1 establishing the Bidder's eligibility and qualifications to perform the Contract if its Bid is accepted;
- (g) **Conformity:** documentary evidence in accordance to ITB 16 that the Plant and Installation Services offered by the Bidder conform to the bidding document;
- (h) **Subcontractors:** list of subcontractors in accordance with ITB 16.2; and
- (i) any other document required in the BDS.

Envelop 2 –Financial Offer

- (a) **Letter of Price Bid** prepared with the Financial Offer according to ITB 12.1
- (a) **Price Schedules** completed in accordance with ITB 12 and ITB 17;
- (b) any other document required in the BDS.

11.2 In addition to the requirements under ITB 11.1, Bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into

by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all members and submitted with the Bid, together with a copy of the proposed Agreement. (Note that 11.2 shall be included in the Envelop 1, not Envelop 2).

11.3 The Bidder shall furnish in the Letter of Bid information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid

12. Letter of Bid and Price Schedules

12.1 The Letter of Bid and Price Schedules shall be prepared, using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed as instructed in each form without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 21.3. All blank spaces shall be filled in with the information requested.

- | | |
|--|--|
| 13. Alternative Bids | <p>13.1 Unless otherwise specified in the BDS, alternative Bids shall not be considered.</p> <p>13.2 When alternatives to the Time Schedule are explicitly invited, a statement to that effect will be included in the BDS, and the method of evaluating different time schedules will be described in Section III, Evaluation and Qualification Criteria.</p> <p>13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the Employer's requirements as described in the bidding document must also provide: (i) a price at which they are prepared to offer a Plant meeting the Employer's requirements; and (ii) all information necessary for a complete evaluation of the alternatives by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed installation methodology and other relevant details. Only the technical alternatives, if any, of the Bidder with the Most Advantageous Bid conforming to the basic technical requirements shall be considered by the Employer.</p> <p>13.4 When Bidders are invited in the BDS to submit alternative technical solutions for specified parts of the facilities, such parts will be identified in the BDS, as will the method for their evaluation, and described in Section VII, Employer's Requirements.</p> |
| 14. Documents
Establishing the
Eligibility of the
Plant and
Installation
Services | <p>14.1 To establish the eligibility of the Plant and Installation Services in accordance with ITB 5, Bidders shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Bidding Forms.</p> |
| 15. Documents
Establishing the
Eligibility and
Qualifications of
the Bidder | <p>15.1 To establish its eligibility and qualifications to perform the Contract in accordance with Section III, Evaluation and Qualification Criteria, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Bidding Forms.</p> |

**16. Documents
Establishing the
Conformity of
the Plant and
Installation
Services**

- 16.1 The Bidder shall furnish the information stipulated in Section IV, Bidding Forms in sufficient detail to demonstrate substantial responsiveness of the Bidders' proposal to the work requirements and the completion time.
- 16.2 For major items of Plant and Installation Services as listed by the Employer in Section III, Evaluation and Qualification Criteria, which the Bidder intends to purchase or subcontract, the Bidder shall give details of the name and nationality of the proposed Subcontractors, including manufacturers, for each of those items. In addition, the Bidder shall include in its Bid information establishing compliance with the requirements specified by the Employer for these items. Quoted rates and prices will be deemed to apply to whichever Subcontractor is appointed, and no adjustment of the rates and prices will be permitted. Bidders shall note that standards for workmanship, materials and equipment designated by the Employer in the Bidding Document are intended to be descriptive (establishing standards of quality and performance) only and not restrictive. The Bidder may substitute alternative standards, brand names and/or catalog numbers in its bid, provided that it demonstrates to the Employer's satisfaction that the substitutions are substantially equivalent or superior to the standards.
- 16.3 The Bidder shall be responsible for ensuring that any Subcontractor proposed complies with the requirements of ITB 4, and that any plant, or services to be provided by the Subcontractor comply with the requirements of ITB 5 and ITB 15.1.

**17. Bid Prices and
Discounts**

Unless otherwise specified **in the BDS**, Bidders shall quote for the entire Plant and Installation Services on a "single responsibility" basis. The total Bid price shall include all the Contractor's obligations mentioned in or to be reasonably inferred from the bidding document in respect of the design, manufacture, including procurement and subcontracting (if any), delivery, construction, installation and completion of the Plant. This includes all requirements under the Contractor's responsibilities for testing, pre-commissioning and commissioning of the plant and, where so required by the bidding document, the acquisition of all permits, approvals and licenses, etc.; the operation, maintenance and training services and such other items and services as specified in the bidding document, all in accordance with the requirements of the General Conditions. Items against which no price is entered by

the Bidder will not be paid for by the Employer when executed and shall be deemed to be covered by the prices for other items.

- 17.2 Bidders are required to quote the price for the commercial, contractual and technical obligations outlined in the bidding document.
- 17.3 Bidders shall give a breakdown of the prices in the manner and detail called for in the Price Schedules included in Section IV, Bidding Forms.
- 17.4 Depending on the scope of the Contract, the Price Schedules may comprise up to the six (6) schedules listed below. Separate numbered Schedules included in Section IV, Bidding Forms, from those numbered 1 to 4 below, shall be used for each of the elements of the Plant and Installation Services. The total amount from each Schedule corresponding to an element of the Plant and Installation Services shall be summarized in the schedule titled Grand Summary, (Schedule 5), giving the total Bid price(s) to be entered in the Letter of Bid. Bidders shall note that the plant and equipment included in Schedule Nos. 1 and 2 below exclude materials used for civil, building and other construction works. All such materials shall be included and priced under Schedule No. 4, Installation Services. The Schedules comprise:

- Schedule No. 1:** Plant (including Mandatory Spare Parts)
Supplied from Abroad
- Schedule No. 2:** Plant (including Mandatory Spare Parts)
Supplied from within the Employer's Country
- Schedule No. 3:** Design Services
- Schedule No. 4:** Installation Services
- Schedule No. 5:** Grand Summary (Schedule Nos.1 to 4)
- Schedule No. 6:** Mandatory Spare Parts

- 17.5. In the Schedules, Bidders shall give the required details and a breakdown of their prices as follows:
- (a) Plant to be supplied from abroad (Schedule No. 1):
The price of the Plant shall be quoted on CIP-named place of destination basis as specified **in the BDS**.
 - (b) Plant manufactured within the Employer's Country (Schedule

- No. 2):
- (i) The price of the plant shall be quoted on an EXW Incoterm basis (such as “ex-works,” “ex-factory,” “ex-warehouse” or “off-the-shelf,” as applicable);
 - (ii) Sales tax and all other taxes payable in the Employer’s Country on the plant if the contract is awarded to the Bidder;
- (c) Design Services (Schedule No. 3);
- (d) Installation Services shall be quoted separately (Schedule No. 4) and shall include rates or prices for local transportation to named place of final destination as specified **in the BDS**, insurance and other services incidental to delivery of the plant, all labor, contractor’s equipment, temporary works, materials, consumables and all matters and things of whatsoever nature, including operations and maintenance services, the provision of operations and maintenance manuals, training, etc., where identified in the bidding document, as necessary for the proper execution of the installation and other services, including all taxes, duties, levies and charges payable in the Employer’s Country as of twenty-eight (28) days prior to the deadline for submission of Bids;
- (e) Mandatory spare parts shall be quoted separately (Schedule 6) as specified in either subparagraph (a) or (b) above in accordance with the origin of the spare parts.
- 17.6 The terms EXW, CIP, and other similar terms shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce, as specified **in the BDS**.
- 17.7 The prices shall be either fixed or adjustable as specified **in the BDS**.
- 17.8 In the case of **Fixed Price**, prices quoted by the Bidder shall be fixed during the Bidder’s performance of the contract and not subject to variation on any account. A Bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.
- 17.9 In the case of **Adjustable Price**, prices quoted by the Bidder shall be subject to adjustment during performance of the contract to reflect changes in the cost elements such as labor, material,

transport and contractor's equipment in accordance with the procedures specified in the corresponding Appendix to the Contract Agreement. A Bid submitted with a fixed price quotation will not be rejected, but the

price adjustment will be treated as zero. Bidders are required to indicate the source of labor and material indices in the corresponding Form in Section IV, Bidding Forms.

17.10 If so indicated in ITB 1.1, Bids are being invited for individual lots (contracts) or for any combination of lots (packages). Bidders wishing to offer any price reduction (discount) for the award of more than one Contract shall specify in their Letter of Bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package, and the manner in which the price reductions will apply.

17.11 Bidders wishing to offer any unconditional discount shall specify in their Letter of Bid the offered discounts and the manner in which price discounts will apply.

18. Currencies of Bid and Payment

18.1 The currency (ies) of the Bid and the currency (ies) of payments shall be the same. The Bidder shall quote in the currency of the Employer's country the portion of the Bid price that corresponds to expenditures incurred in the currency of the Employer's Country, unless otherwise specified **in the BDS**.

19. Period of Validity of Bids

19.1 Bids shall remain valid for the Bid Validity period specified **in the BDS**. The Bid Validity period starts from the Bid submission deadline (as prescribed by the Employer in accordance with ITB 23.1). A Bid valid for a shorter period shall be rejected by the Employer as nonresponsive.

19.2 In exceptional circumstances, prior to the expiration of the Bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB 20, the Bidder granting the request shall also extend the Bid Security for twenty-eight (28) days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its Bid, except as provided in ITB 19.3.

- 19.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial Bid validity period, the Contract price shall be determined as follows:
- (a) in the case of **fixed price** contracts, the Contract price shall be the Bid price adjusted by the factor or factors specified **in the BDS**;
 - (b) in the case of **adjustable price** contracts, no adjustment shall be made; or
 - (c) in any case, Bid evaluation shall be based on the Bid price without taking into consideration the applicable correction from those indicated above.

20. Bid Security

- 20.1 The Bidder shall furnish as part of its Bid, either a Bid-Securing Declaration or a Bid Security as specified **in the BDS**, in original form and, in the case of a Bid Security, in the amount and currency specified **in the BDS**.
- 20.2 A Bid-Securing Declaration shall use the form included in Section IV Bidding Forms.
- 20.3 If a Bid Security is specified pursuant to ITB 20.1, the Bid security shall be a demand guarantee in any of the following forms at the Bidder's option:
- (a) an unconditional guarantee issued by a bank or non-bank financial institution (such as an insurance, bonding or surety company);
 - (b) an irrevocable letter of credit;
 - (c) a cashier's or certified check; or
 - (d) another security indicated **in the BDS**,

from a reputable source from an eligible country. If an unconditional guarantee is issued by a non-bank financial institution located outside the Employer's Country the issuing non-bank financial institution shall have a correspondent financial institution located in the Employer's Country to make it enforceable unless the Employer has agreed in writing, prior to Bid submission, that a correspondent financial institution is not required. In the case of a bank guarantee, the Bid Security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Employer prior to Bid submission. The Bid Security shall be valid for twenty-eight (28) days beyond the

original validity period of the Bid, or beyond any period of extension if requested under ITB 19.2.

- 20.4 If a Bid Security or a Bid-Securing Declaration is specified pursuant to ITB 20.1, any Bid not accompanied by a substantially responsive Bid Security or Bid-Securing Declaration shall be rejected by the Employer as nonresponsive.
- 20.5 If a Bid Security is specified pursuant to ITB 20.1, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the Performance Security pursuant to ITB 47.
- 20.6 The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required Performance Security.
- 20.7 The Bid Security may be forfeited or the Bid-Securing Declaration executed:
- (a) if a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Letter of Bid; or
 - (b) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB 46; or
 - (ii) furnish a Performance Security in accordance with ITB 47.
- 20.8 The Bid Security or the Bid-Securing Declaration of a JV shall be in the name of the JV that submits the Bid. If the JV has not been legally constituted into a legally enforceable JV at the time of bidding, the Bid Security or the Bid Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITB 4.1 and ITB 11.2.
- 20.9 If a Bid Security is not required **in the BDS**: and
- (a) if a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Letter of Bid , except as provided in ITB 19.2; or
 - (b) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB 46; or
 - (ii) furnish a Performance Security in accordance with ITB 47;

the Borrower may, if provided for **in the BDS**, declare the Bidder disqualified to be awarded a contract by the Employer for a period of time as stated **in the BDS**.

**21. Format and
Signing of Bid**

- 21.1 The Bidder shall prepare one original of the documents comprising the bid as described in ITB 11 and clearly mark it “Original.” Alternative Bids, if permitted in accordance with ITB 13, shall be clearly marked “Alternative”. In addition, the Bidder shall submit copies of the Bid, in the number specified **in the BDS** and clearly mark them “Copy.” In the event of any discrepancy between the original and the copies, the original shall prevail.
- 21.2 Bidders shall mark as “CONFIDENTIAL” information in their Bids which is confidential to their business. This may include proprietary information, trade secrets or commercial or financially sensitive information.
- 21.3 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified **in the BDS** and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid where entries or amendments have been made shall be signed or initialed by the person signing the Bid.
- 21.4 In the case that the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.
- 21.5 Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

D. Submission and Opening of Bids

**22. Submission,
Sealing and
Marking of Bids**

- 22.1 The Bidder shall enclose the original of the Technical Bid, the original of the Price Bid, and each copy of the Technical Bid and each copy of the Price Bid, in separate sealed envelopes, duly marking the envelopes as “ORIGINAL – TECHNICAL BID”, “ORIGINAL – PRICE BID” and “COPY NO... – TECHNICAL BID” and “COPY NO – PRICE BID.” These envelopes, the first containing the originals and the others containing copies, shall then be enclosed in one single envelope per set. If permitted in accordance with ITB 13, alternative bids shall be similarly sealed, marked and included in the sets.

22.2

- (a) in an envelope marked “ORIGINAL”, all documents comprising the Bid, as described in ITB 11; and
- (b) in an envelope marked “COPIES”, all required copies of the Bid; and
- (c) if alternative Bids are permitted in accordance with ITB 13, and
if relevant:
 - (i) in an envelope marked “ORIGINAL–ALTERNATIVE BID” the alternative Bid; and
 - (ii) in the envelope marked “COPIES – ALTERNATIVE BID” all required copies of the alternative Bid.

22.3 The inner and outer envelopes shall:

- (a) bear the name and address of the Bidder;
- (b) be addressed to the Employer in accordance with ITB 23.1;
- (c) bear the specific identification of this Bidding process indicated in accordance with ITB 1.1; and
- (d) bear a warning not to open before the time and date for Bid opening.

22.4 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

23. Deadline for Submission of Bids23.1 Bids must be received by the Employer at the address and no later than the date and time indicated **in the BDS**. When so specified **in the BDS**, Bidders shall have the option of submitting their Bids electronically. Bidders submitting Bids electronically shall follow the electronic Bid submission procedures specified **in the BDS**.

23.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the bidding document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

24. Late Bids

24.1 The Employer shall not consider any Bid that arrives after the deadline for submission of Bids, in accordance with ITB 23. Any Bid received by the Employer after the deadline for submission of

Bids shall be declared late, rejected, and returned unopened to the Bidder.

25. Withdrawal, Substitution, and Modification of Bids

- 25.1 A Bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 21.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be:
- (a) prepared and submitted in accordance with ITB 21 and ITB 22 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked "Withdrawal," "Substitution," "Modification"; and
 - (b) received by the Employer prior to the deadline prescribed for submission of Bids, in accordance with ITB 23.
- 25.2 Bids requested to be withdrawn in accordance with ITB 25.1 shall be returned unopened to the Bidders.
- 25.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

26. Bid Opening

- 26.1 The Employer shall open the Technical bids in public at the address, date and time specified in the BDS in the presence of Bidders` designated representatives and anyone who choose to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 23.1, shall be as specified in the BDS. The Price Bids will remain unopened and will be held in custody of the Employer until the specified time of their opening.
- 26.2 First, the written notice of withdrawal in the envelopes marked "Withdrawal" shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Bid opening.
- 26.3 Next, envelopes marked "Substitution" shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the

Bidder. No Bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Bid opening.

- 26.4 Next, envelopes marked “Modification” shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Bid opening.
- 26.5 All other envelopes holding the Technical Bids shall be opened one at a time, and the following read out and recorded;
- (a) the name of the Bidder;
 - (b) whether there is a modification or substitution;
 - (c) the presence of a bid security, if required; and
 - (d) any other details as the Employer may consider appropriate.
- 26.6 Only Technical Bids and alternative Technical Bids read out and recorded at bid opening shall be considered for evaluation. If so required by the Employer in the BDS, the letter of Bid and Bill of Quantities are to be initialed by representatives of the Employer attending bid opening in the manner indicated in the BDS. No bid shall be rejected at the opening of Technical Bids except for late bids, in accordance with ITB 23.1.
- 26.7 The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum: the name of the Bidder and whether there is a withdrawal, substitution, or modification; alternative proposals; and the presence or absence of a bid security, if one was required. The Bidders’ representatives who are present shall be requested to sign the record. The omission of a Bidder’s signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.
- 26.8 At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice of the opening of Price Bids.

- 26.9 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bids being substantially non-responsive to the requirements of the Bidding Document and return their Price Bids unopened.
- 26.10 The Employer shall conduct the opening of Price Bids of all Bidders who submitted substantially responsive Technical Bids, in the presence of Bidders' representatives who choose to attend at the address, date and time specified by the Employer. The Bidders' representatives who are present shall be requested to sign a register evidencing their attendance.
- 26.11 The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders. All envelopes containing Price Bids shall be opened one at a time and the following read out and recorded;
- (a) The name of the Bidder;
 - (b) whether there is a modification or substitution;
 - (c) the Bid Prices, including any discounts and alternative offers; and
 - (d) any other details as the Employer may consider appropriate.
- 26.12 Only Price Bids discounts, and alternative offers read out and recorded during the opening of Price Bids shall be considered for evaluation. If so required by the Employer in the BDS, the letter of Bid and Bill of Quantities are to be initialed by representatives of the Employer attending bid opening in the manner indicated in the BDS. No Bid shall be rejected at the opening of Price Bids.
- 26.13 The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum: the name of the Bidder, the Bid Price (per lot if applicable), any discounts, and alternative offers. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.

E. Evaluation and Comparison of Bids

27. Confidentiality

- 27.1 Information relating to the evaluation of Bids and recommendation of contract award, shall not be disclosed to

Bidders or any other persons not officially concerned with the Bidding process until information on Intention to Award the Contract is transmitted to all Bidders in accordance with ITB 42.

27.2 Any effort by a Bidder to influence the Employer in the evaluation of the bids or Contract award decisions may result in the rejection of its Bid.

27.3 Notwithstanding ITB 27.2, from the time of Bid opening to the time of Contract Award, if any Bidder wishes to contact the Employer on any matter related to the Bidding process, it should do so in writing.

28. Clarification of Bids

28.1 To assist in the examination, evaluation, and comparison of the Bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids, in accordance with ITB 32.

28.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.

29. Deviations, Reservations, and Omissions

29.1 During the evaluation of Bids, the following definitions apply:

- (a) "Deviation" is a departure from the requirements specified in the bidding document;
- (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the bidding document; and
- (a) "Omission" is the failure to submit part or all of the information or documentation required in the bidding document.

30. Determination of Responsiveness

30.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB11.

30.2 A substantially responsive Bid is one that meets the requirements of the bidding document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that:

- (a) if accepted, would:
 - (i) affect in any substantial way the scope, quality, or performance of the Plant and Installation Services specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the bidding document, the Employer's rights or the Bidder's obligations under the proposed Contract; or
- (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.

30.3 The Employer shall examine the technical aspects of the Bid in particular, to confirm that all requirements of Section VII, Employer's Requirements have been met without any material deviation, reservation, or omission.

30.4 If a Bid is not substantially responsive to the requirements of the bidding document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

31. Nonmaterial Nonconformities

31.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformity in the Bid that does not constitute a material deviation, reservation or omission.

31.2 Provided that a Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

31.3 Provided that a Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified **in the BDS**.

32. Correction of Arithmetical Errors

32.1 Provided that the Bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:

- (a) where there are errors between the total of the amounts given under the column for the price breakdown and the

- amount given under the Total Price, the former shall prevail and the latter will be corrected accordingly;
- (b) where there are errors between the total of the amounts of Schedule Nos. 1 to 4 and the amount given in Schedule No. 5 (Grand Summary), the former shall prevail and the latter will be corrected accordingly; and
 - (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.
- 32.2 Bidders shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITB 32.1, shall result in the rejection of the Bid.
- 33. Conversion to Single Currency**
- 33.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified **in the BDS**.
- 34. Margin of Preference**
- 34.1 No margin of domestic preference shall apply.
- 35. Evaluation of Bids**
- 35.1 The Employer shall use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Employer shall determine the Most Advantageous Bid. This is the Bid of the Bidder that meets the qualification criteria and that has been determined to be:
- (a) substantially responsive to the bidding document and exceeds the minimum score on its technical evaluation; and
 - (b) the lowest evaluated bid
- 35.2 **Technical Evaluation.** The Employer will carry out a detailed technical evaluation of the Bids not previously rejected to determine whether the technical aspects are in compliance with the bidding document. The Bid that does not meet minimum acceptable standards of completeness, consistency and detail, and the specified minimum (or maximum, as the case may be) requirements for specified functional guarantees, will be rejected for non-responsiveness. In order to reach its determination, the Employer will examine and compare the technical aspects of the Bids on the basis of the information supplied by the Bidders, taking into account the following:

- (a) overall completeness and compliance with the Employer's Requirements; conformity of the Plant and Installation Services offered with specified performance criteria, including conformity with the specified minimum (or maximum, as the case may be) requirement corresponding to each functional guarantee, as indicated in the Specification and in Section III, Evaluation and Qualification Criteria; suitability of the Plant and Installation Services offered in relation to the environmental and climatic conditions prevailing at the site; and quality, function and operation of any process control concept included in the Bid;
 - (b) type, quantity and long-term availability of mandatory and recommended spare parts and maintenance services; and
 - (c) other relevant factors, if any, listed in Section III, Evaluation and Qualification Criteria.
- 35.3 Where alternative technical solutions have been allowed in accordance with ITB 13, and offered by the Bidder, the Employer will make a similar evaluation of the alternatives. Where alternatives have not been allowed but have been offered, they shall be ignored.
- 35.4 **Economic Evaluation.** To evaluate a Price Bid, the Employer shall consider the following:
- (a) the Bid price, excluding provisional sums and the provision, if any, for contingencies in the Price Schedules;
 - (b) price adjustment for correction of arithmetic errors in accordance with ITB 32.1;
 - (c) price adjustment due to discounts offered in accordance with ITB 17.11;
 - (d) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 31.3;
 - (e) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 33; and
 - (f) the evaluation factors specified **in the BDS** and in Section III, Evaluation and Qualification Criteria.
- 35.5 If price adjustment is allowed in accordance with ITB 17.7, the estimated effect of the price adjustment provisions of the

Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.

- 35.6 If this bidding document allows Bidders to quote separate prices for different lots (contracts), and the award to a single Bidder of multiple lots (contracts), the methodology to determine the lowest evaluated cost of the lot (contract) combinations, including any discounts offered in the Letter of Bid, is specified in Section III, Evaluation and Qualification Criteria.

36. Comparison of Bids

- 36.1 The Employer shall compare the evaluated costs of all substantially responsive Bids established in accordance with ITB 35.4 to determine the Bid that has the lowest evaluated cost.

37. Abnormally Low Bids

- 37.1 An Abnormally Low Bid is one where the Bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the Bidder to perform the Contract for the offered Bid Price.
- 37.2 In the event of identification of a potentially Abnormally Low Bid, the Employer shall seek written clarifications from the Bidder, including detailed price analyses of its Bid price in correlation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the bidding document.
- 37.3 After evaluation of the price analyses, in the event that the Employer determines that the Bidder has failed to demonstrate its capability to deliver the contract for the offered tender price, the Employer shall reject the Bid.

38. Unbalanced or Front Loaded Bids

- 38.1 If the Bid that is evaluated as the lowest evaluated cost is, in the Employer's opinion, seriously unbalanced or front loaded the Employer may require the Bidder to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Bid prices with the scope of works, proposed methodology, schedule and any other requirements of the bidding document.
- 38.2 After the evaluation of the information and detailed price analyses presented by the Bidder, the Employer may:
- (a) accept the Bid; or
 - (b) if appropriate, require that the total amount of the Performance Security be increased, at the expense of the Bidder, to a level not exceeding twenty percent (20%) of the Contract Price; or

- (c) reject the Bid.
- 39. Eligibility and Qualification of the Bidder**
- 39.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated cost and substantially responsive Bid is eligible and meets the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.
- 39.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 15.1. The determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the bidding document) or any other firm(s) different from the Bidder.
- 39.3 An affirmative determination shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the Bid, in which event the Employer shall proceed to the Bidder who offers a substantially responsive Bid with the next lowest evaluated cost to make a similar determination of that Bidder's qualifications to perform satisfactorily.
- 39.4 The capabilities of the manufacturers and subcontractors proposed in its Bid to be used by the Bidder with the Most Advantageous Bid for identified major items of supply or services will also be evaluated for acceptability in accordance with Section III, Evaluation and Qualification Criteria. Their participation should be confirmed with a letter of intent between the parties, as needed. Should a manufacturer or subcontractor be determined to be unacceptable, the Bid will not be rejected, but the Bidder will be required to substitute an acceptable manufacturer or subcontractor without any change to the Bid price. Prior to signing the Contract, the corresponding Appendix to the Contract Agreement shall be completed, listing the approved manufacturers or subcontractors for each item concerned.
- 40. Employer's right to Accept Any Bid and to Reject Any or All Bids**
- 40.1 The Employer reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids at any time prior to Contract Award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, Bid securities shall be promptly returned to the Bidders.
- 41. Standstill Period**
- 41.1 The Contract shall not be awarded earlier than the expiry of the Standstill Period. The Standstill Period shall be ten (10) Business Days unless extended in accordance with ITB 45. The Standstill

Period commences the day after the date the Employer has transmitted to each Bidder the Notification of Intention to Award the Contract. Where only one Bid is submitted, or if this contract is in response to an emergency situation recognized by the Bank, the Standstill Period shall not apply.

42. Notification of Intention to Award

- 42.1 The Employer shall send to each Bidder the Notification of Intention to Award the Contract to the successful Bidder. The Notification of Intention to Award shall contain, at a minimum, the following information:
- (a) the name and address of the Bidder submitting the successful Bid;
 - (b) the Contract price of the successful Bid;
 - (c) the names of all Bidders who submitted Bids, and their Bid prices as readout, and as evaluated;
 - (d) a statement of the reason(s) the Bid (of the unsuccessful Bidder to whom the notification is addressed) was unsuccessful, unless the price information in c) above already reveals the reason;
 - (e) the expiry date of the Standstill Period; and
 - (f) instructions on how to request a debriefing and/or submit a complaint during the standstill period.

F. Award of Contract

43. Award Criteria

43.1 Subject to ITB 40, the Employer shall award the Contract to the successful Bidder. This is the Bidder whose Bid has been determined to be the Most Advantageous Bid. This is the Bid of the Bidder that meets the qualification criteria and whose Bid has been determined to be:

- (a) substantially responsive to the bidding document and exceeds the minimum score on its technical evaluation; and
- (b)** (b) the lowest evaluated bid

44. Notification of Award

44.1 Prior to the expiration of the Bid Validity Period, and upon expiry of the Standstill Period, specified in ITB 41.1 or any extension thereof, and upon satisfactorily addressing any complaint that has been filed within the Standstill Period, the Employer shall notify the successful Bidder, in writing, that its Bid has been accepted. At the same time, the Employer shall

also notify unsuccessful Bidders of the results of the bidding including the following information;

- (a) name of each Bidder who submitted a Bid;
- (b) bid prices as read out at Bid Opening;
- (c) name and evaluated prices of each Bid that was evaluated;
- (d) name of bidders whose bids were rejected and the reasons for their rejection; and
- (e) name of the winning Bidder, and Price it offered, as well as the duration and summary scope of the contract awarded.

44.2 Until a formal contract is prepared and executed, the Letter of Acceptance shall constitute a binding Contract

**45. Debriefing by
the Employer**

45.1 On receipt of the Employer's Notification of Intention to Award referred to in ITB 42, an unsuccessful Bidder has three (3) Business Days to make a written request to the Employer for a debriefing. The Employer shall provide a debriefing to all unsuccessful Bidders whose request is received within this deadline.

45.2 Where a request for debriefing is received within the deadline, the Employer shall provide a debriefing within five (5) Business Days, unless the Employer decides, for justifiable reasons, to provide the debriefing outside this timeframe. In that case, the standstill period shall automatically be extended until five (5) Business Days after such debriefing is provided. If more than one debriefing is so delayed, the standstill period shall not end earlier than five (5) Business Days after the last debriefing takes place. The Employer shall promptly inform, by the quickest means available, all Bidders of the extended standstill period.

45.3 Where a request for debriefing is received by the Employer later than the three (3)-Business Day deadline, the Employer should provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of Public Notice of Award of contract. Requests for debriefing received outside the three (3)-day deadline shall not lead to extension of the standstill period.

45.4 Debriefings of unsuccessful Bidders may be done in writing or verbally. The Bidder shall bear their own costs of attending such a debriefing meeting.

46. Signing of Contract

- 46.1 The Employer shall send to the successful Bidder the Letter of Acceptance including the Contract Agreement, and, if specified in the BDS, a request to submit the Beneficial Ownership Disclosure Form providing additional information on its beneficial ownership. The Beneficial Ownership Disclosure Form, if so requested, shall be submitted within eight (8) Business Days of receiving this request.
- 46.2 The successful Bidder shall sign, date and return to the Employer, the Contract Agreement within twenty-eight (28) days of its receipt.
- 46.3 Notwithstanding ITB 46.2 above, in case signing of the Contract Agreement is prevented by any export restrictions attributable to the Employer, to the country of the Employer, or to the use of the Plant and Installation Services to be supplied, where such export restrictions arise from trade regulations from a country supplying those Plant and Installation Services, the Bidder shall not be bound by its Bid, always provided, however, that the Bidder can demonstrate to the satisfaction of the Employer and of the Bank that signing of the Contract Agreement has not been prevented by any lack of diligence on the part of the Bidder in completing any formalities, including applying for permits, authorizations and licenses necessary for the export of the Plant and Installation Services under the terms of the Contract

47. Performance Security

- 47.1 Within twenty-eight (28) days of the receipt of the Letter of Acceptance from the Employer, the successful Bidder shall furnish the Performance Security in accordance with the General Conditions GCC 13.3, subject to ITB 38, using for that purpose the Performance Security Form included in Section X, Contract Forms, or another form acceptable to the Employer. If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer's Country, unless the Employer has agreed in writing that a correspondent financial institution is not required.
- 47.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Employer may award the Contract to the Bidder offering the next Most Advantageous Bid.

**48. Procurement
Related
Complaint**

48.1 The procedures for making a Procurement-related Complaint are as specified in the BDS.

Section II - Bid Data Sheet

The following specific data for the Facilities to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

A. General	
ITB 1.1	<p>The reference number of the Request for Bids (RFB) is : No 001-2018-MEM</p> <p>The Employer is: Ministry of Energy and Mines</p> <p>The name of the RFB is: "Supplies, Installation, Training and Commissioning of Off-Grid Photovoltaic Systems in Rural Areas"</p> <p>The number and identification of lots (contracts) comprising this RFB is: ONE.</p> <p><i>"Supplies, installation, training and commissioning of off-grid photovoltaic systems in rural areas for 10,172 households, 164 schools and 164 community centers and 22 health centers located in the 108 communities of 09 municipalities of the Autonomous Region of the Coast North Caribbean (RACCN), Autonomous Region of the South Caribbean Coast (RACCS), and the Department of Río San Juan.</i></p>
ITB 1.2 (a)	Not applicable
ITB 2.1	<p>The Borrower is: Government of the Republic Nicaragua (through Ministry of Finance and Public Credit) and Employer is Ministry of Energy and Mines</p> <p>The amount of the financing for the execution of this project is: Thirty-three million three hundred and eighty thousand US Dollars (US\$ 33,380,000.00) The name of the Project is: Renewable Energy development Project in Rural Areas.</p>
ITB 4.1	Not Applicable
ITB 4.5	Not Applicable
B. Bidding Document	
ITB 7.1	<p>For <u>Clarification of Bid purposes</u> only, the Employer's address is:</p> <p>Attention: Mrs. Mayra Barrera Andino Procurement Director MEM Street Address: Roberto Terán (Centroamérica) Roundabout 700mts West, Vista Development Building, Ministry of Energy and Mines, Managua, Nicaragua</p>

	<p>Floor/Room number: 2nd Floor City: Managua Country: Nicaragua Telephone: +505-22527400 Electronic mail address: mayra.barrera@mem.gob.ni</p> <p>The Employer should receive requests for clarification no later than: October 31st, 2018.</p>
ITB 7.4	<p>A Pre-Bid meeting will be held take place at the following date, time and place:</p> <ul style="list-style-type: none"> - Date: October 19th, 2018 - Time: 10:00 am (Nicaragua Local Time) - Place: Roberto Terán (Centroamerica) Roundabout 700mts West, Vista Development Building, Ministry of Energy and Mines, Managua, Nicaragua - Floor/Room number: 2 Floor City: Managua <p>A site visit conducted by the Employer “shall be” organized (Obligatory Visit for the bidders).</p> <p>Schedule:</p> <ul style="list-style-type: none"> - Visit to Dept. Rio San Juan from October 22th to 24th, 2018 Departure at 4:00 am (Nicaragua Local Time) - Visit RACCS and RACCN from October 25th to 29th, 2018 Departure at 4:00 a.m. (Nicaragua Local Time)
ITB 7.6	Not Applicable
ITB 8.3	Not Applicable
C. Preparation of Bids	
ITB 10.1	<p>The language of the Bid is: “English”</p> <p>All correspondence exchange shall be in <u>English</u> language.</p>
ITB 11.1 (i)	<p>The Bidder shall submit the following additional documents in its Technical Bid:</p> <ol style="list-style-type: none"> 1. <i>The Bidders are required to provide the notarized copy of the following legal documents :</i> 2. <i>The Power of Attorney Apostilled of whom signed the bid.</i> 3. <i>Laws of the Company Apostilled</i> 4. <i>Merchant's Registry</i> 5. <i>Certificate of Legal Operation with Apostilled</i> 6. <i>Audited Financial Reports issue by Audit Firm in latest three years (2015, 2016, and 2017).</i>

ITB 13.1	Alternative Bids <i>“shall not be”</i> permitted.
ITB 13.2	Alternatives to the Time Schedule <i>“shall not be”</i> permitted.
ITB 13.4	Alternative technical solutions shall be permitted for the following parts of the Plant and Installation Services: <i>Not applicable.</i>
ITB 17.1	Bidders shall quote for the following components or services on a single responsibility basis: <i>All supplies objects of this tender.</i>
ITB 17.5 (a) and (d)	Place of destination: Final destination (Project Site): DDP (<i>RACCN, RACCS y Departamento de Río San Juan</i>)
ITB 17.6	The Incoterms edition is : <i>Incoterm 2010.</i>
ITB 17.7	The prices quoted by the Bidder: <i>Not be</i> subject to adjustment during the performance of the Contract.
ITB 18.1	<p>The bid price shall be stated in US Dollars. However, the contract price shall be stated in Korean Won converted by using the exchange rate which is the average of the telegraphic transfer selling rates on the Korean Won against the US Dollar as quoted and publicly displayed by the Bank, during the one month period from the sixteenth (16th) day of two calendar months prior to the month when the contract is signed, to the fifteen (15th) day of one calendar month prior thereto.</p> <p>All taxes, duties, and levies imposed on goods and services in the Republic of Nicaragua provided by the Suppliers under the Loan Agreement for the implementation of the Project shall be exempted by the Borrower.</p>
ITB 19.1	The Bid validity period shall be 120 days counting as of the deadline for Bid submission.
ITB 19.3 (a)	The Bid price shall be adjusted by the following factor(s): Not applicable
ITB 20.1	<p>A Bid Security <i>shall be</i> required.</p> <p>A Bid-Securing Declaration <i>shall not be</i> required.</p> <p>The amount and currency of the Bid Security shall be US\$ 300,000.00</p>
ITB 20.3 (d)	<p>Other types of acceptable securities:</p> <p><u><i>Not applicable.</i></u></p>

ITB 20.9	<u>Not applicable.</u>
ITB 21.3	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Power of Attorney with Notarization.
ITB 21 and 22	<p>In addition to the original of the Bid, the number of copies are:</p> <p>(a) <i>One (01) original in English</i></p> <p>(b) <i>Two (02) copy in English for the EMPLOYER .</i></p> <p>(c) <i>Two (02) CD (softcopy) of Bid (one (1) for Technical Proposal and one (1) for Financial Proposal submitted in appropriate bidding envelopes). MS Excel shall be used for Bid Price Summary, Detailed Price Analysis. MS Word shall be used for the other documents (except drawing shall be prepared by Auto CAD)</i></p> <p><i>*All CDs submitted to the Employer should be made in PDF, MS Word, AutoCad and MS Excel formats.</i></p> <p>(d) <i>Technical and financial proposals shall be prepared with bid forms in Chapter 4 of Volume I after reading ITB of Volume I and Specifications of Volume II. Guidelines for technical and financial proposals are as follows</i></p> <ul style="list-style-type: none"> - <i>Table of Contents and interleaving papers are not counted in the page limit requirements. For Forms I to IV: Maximum 50 numbered pages A4</i> <p><i>Format. For Form V Drawings: Maximum 30 pages, A3 Format.</i></p> <p><i>Interleaving paper should only contain titles and sub-table of contents. No other information should be written on the paper.</i></p> <ul style="list-style-type: none"> - <i>Bid documents (except the bid drawing) shall be printed on both sides and page number shall be shown on all papers except table of contents and interleaving papers.</i> - <i>If bid documents, which are supposed to be written on A4 size paper, are prepared with A3 size, letters or characters shall not be inserted. No page number should show on back pages of A3 paper. However, in case of bid document on A4 size, back pages of A4 documents should be counted as page number. However, interleaving paper and the last page are exception.</i> - <i>A3 paper is the standard size for design document</i> - <i>Image file created through non-CAD program, 3-D file generated through CAD program and others should not be inserted on design documents.</i> - <i>It is allowed to include output produced from computational analysis results (only limited to the case using analysis software), but should be separately attached as an annex.</i> - <i>All bid documents could be read and edited through text editing programs including MS Word, Auto CAD and Excel. When creating design documents and</i>

	<p>reports, trappings of paper sheets and marginal parts on left, right, up and down are prohibited.</p> <p>- If size of design drawings and calculation papers are not specifically indicated, select one of the following specifications.</p> <table border="1"> <tr> <th>Category</th><th>Size(length x width, mm)</th></tr> <tr> <td>A3</td><td>297 x 420</td></tr> <tr> <td>A4</td><td>210 x 297</td></tr> </table>	Category	Size(length x width, mm)	A3	297 x 420	A4	210 x 297
Category	Size(length x width, mm)						
A3	297 x 420						
A4	210 x 297						
D. Submission and Opening of Bids							
ITB 23.1	<p>For Bid submission purposes only, the Employer's address is:</p> <p>Mrs. Mayra Barrera Andino Procurement Director MEM Street Address: Roberto Teran (Centroamerica) Roundabout 700mts West, Vista Development Building, Ministry of Energy and Mines, Managua, Nicaragua Floor/Room number: 2 Floor City: Managua Country: Nicaragua Telephone: +505-22527400 Electronic mail address: mayra.barrera@mem.gob.ni</p> <p>The time for receiving written requests for clarification of Bidding Documents is no later <i>October 31st, 2018</i>; thirty (30) calendar days before the deadline for submission of the Bids</p> <p>The deadline for Bid submission is:</p> <p>Date: November 26th, 2018</p> <p>Time: 14:00 hrs.</p> <p>Bidders "shall not" have the option of submitting their Bids electronically.</p>						
ITB 26.1	<p>The Bid opening shall take place at:</p> <p>Mrs. Mayra Barrera Andino Procurement Director MEM Street Address: Roberto Teran (Centroamerica) Roundabout 700mts West, Vista Development Building, Ministry of Energy and Mines, Managua, Nicaragua Floor/Room number: 2 Floor City: Managua Country: Nicaragua Telephone: +505-22527400 Electronic mail address: mayra.barrera@mem.gob.ni</p> <p>Date: November 26th, 2018 Time: 14:05 hrs</p>						

ITB 26.	The Letter of Bid and Price Schedules shall be initialed, numbered and signed by the Legal Representative of each Bidder.
E. Evaluation, and Comparison of Bids	
ITB 31.3	<u>The adjustment shall be based on the average price of the item or component as quoted in other substantially responsive Bids. If the price of the item or component cannot be derived from the price of other substantially responsive Bids, the Employer shall use its best estimate.</u>
ITB 33.1	<p>The currency that shall be used for Bid evaluation and comparison purposes to convert (at the selling exchange rate) all Bid prices expressed in various currencies into a single currency is: Dollar USA</p> <p>The source of exchange rate shall be: Export and Import Bank of Korea</p> <p>The date for the exchange rate shall be November 26th, 2018.</p>
ITB 35.4 (f)	<p>The adjustments shall be determined using the following criteria, from amongst those set out in Section III, Evaluation and Qualification Criteria:</p> <ul style="list-style-type: none"> (a) Deviation in Time for Completion: <i>No</i> (b) Life cycle costs: the projected operating and maintenance costs during the life of the goods or equipment <i>No</i> (c) Functional Guarantees of the Facilities <i>No</i> (d) Work, services, facilities, etc., to be provided by the Employer <i>No</i> (e)
ITB 46.1	The successful Bidder <i>[shall not]</i> submit the Beneficial Ownership Disclosure Form.
ITB 48.1	<p>The procedures for making a Procurement-related Complaint are detailed in the “<u>Procurement Regulations for IPF Borrowers</u> (Annex III).” If a Bidder wishes to make a Procurement-related Complaint, the Bidder should submit its complaint following these procedures, in writing (by the quickest means available, that is either by email or fax), to:</p> <p>For the attention:</p> <p>Mrs. Mayra Barrera Andino Procurement Director MEM Street Address: Roberto Teran (Centroamerica) Roundabout 700mts West, Vista Development Building, Ministry of Energy and Mines, Managua, Nicaragua Floor/Room number: 2 Floor City: Managua Country: Nicaragua Telephone: +505-22527400</p>

	<p>Electronic mail address: mayra.barrera@mem.gob.ni</p> <p>With a copy to:</p> <p>Mr. Gwanwoon Park Senior Loan Officer of The Export-Import Bank of Korea/ Latin America Team</p> <p>Electronic mail address: gopark@koreaexim.go.kr</p> <p>In summary, a Procurement-related Complaint may challenge any of the following:</p> <ol style="list-style-type: none">1. the terms of the Bidding Documents; and2. the Employer's decision to award the contract.
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Section III - Evaluation and Qualification Criteria

This Section contains all the criteria that the Employer shall use to evaluate Bids and qualify Bidders. No other factors, methods or criteria shall be used other than those specified in this bidding document.

The Bidder shall provide all the information requested in the forms included in Section IV, Bidding Forms.

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COMPLETENESS OF BID DOCUMENTS

Item	Description	Bidder No. (Example)
1	Bid Documents	
1.1	One original and two copies	Y
1.2	Form of Bid	Y
1.3	Appendix to Bid	Y
1.4	Schedule of Rates and Prices	Y
1.5	Bid Security	Y
1.6	Schedule of Particular Information 1) Understanding of the Project 2) Understanding of the site condition in project 3) Project management plan 4) Detail design and engineering plan 5) Detail construction plan 6) Performance of equipment 7) Operation and maintenance support plan 8) Cash Flow	Y P Y P Y P N
1.7	Drawings and Documents.(to be submitted with bid)	P
1.8	Joint Venture Agreement (if Bidder is a joint venture)	P
2	Propriety of Signature and Completeness	
2.1	Power of Attorney submitted or not	Y
2.2	Bid Form properly signed or not	Y
2.3	Completeness of Bids	Y
2.4	Declaration of participation in Economic Development Cooperation Fund (EDCF) financed projects	Y

Note: Y=Yes; N=No;
P=Partial; NA=Not Applicable

SUBSTANTIVE RESPONSIVENESS OF BIDS

No.	Requirements	Bidding Doc. Reference	Bidder No. (Example)
1	Power of Attorney	Section 1, ITB 21	C
2	Signature on Documents	Section 1, ITB 11 & 21	C
3	Joint Venture Agreement	Section 1, ITB 4 & 11	PC
4	Eligibility (a) Bidder & Sub-Contractor (b) Bidder Affiliated with Consultant (c) Material & Equipment	Section 1, ITB 4 & 5	C C C
5	Bid Validity (120 days)	Section 1, ITB 19	C
6	Bid Security (a) Amount and Validity (b) Format and Terms	Section 1, ITB 20	PC
7	Time for Completion	Section 1, ITB 13 & 16	
8	Terms of Payment (a) Advance Payment (50 %) (b) Retention Money (10 %) (c) Price Adjustment	Section 9, Section 1 ITB 17	C PC C
9	Liquidated Damages (a) Rate (0.01 % per week) (b) Maximum Limit (10 %)	Section 9,	C C
10	Defect Liability Period (24 months)	Section 9,	C
11	Performance Security (10 %)	Section 1, ITB 47	C
	FINDINGS		R

Note: C = Complied,
R = Substantially Responsive

NA = Not Applicable,
NC = Not Complied

PC = Partially Complied

1. Evaluation

1.1 Technical Evaluation

Technical evaluation shall be done as the table 1 below.

Table 1. Evaluation Criteria and Maximum Score

Category of Evaluation Criteria		List of Criteria	Evaluation Method*	Max. Score (Points)
Technical Evaluation	1.1.1 Experience (30)	1.1.1 Experience		30
		1.1.1.a The contract value of PV System (Stand-alone or Grid-Tied type) for recent 10 years	Quantitative	10
		1.1.1.b The number of PV Projects (Standalone or Grid-Tied type) for recent 10 years	Quantitative	10
		1.1.1.c The contract value of overseas Power Plants Projects for recent 5 years	Quantitative	10
	1.1.2 Technical (60)	1.1.2.1 Project Approach and Methodology		10
		1.1.2.1.a Understanding of the Project	Qualitative	2.5
		1.1.2.1.b Understanding of the site condition in project	Qualitative	2.5
		1.1.2.1.c Project management plan	Qualitative	5
		1.1.2.2 Construction Plan of PV Power system		20
		1.1.2.2.a Detail design & engineering plan	Qualitative	10
		1.1.2.2.b Detail construction plan	Qualitative	10
		1.1.2.3 Appropriateness of Specification and Operation Plan		30
		1.1.2.3.a Performance of equipment	Qualitative	20
		1.1.2.3.b Operation and Maintenance Support Plan	Qualitative	10
	1.1.3 Key Personnel (10)		Quantitative	10
	Sub-Total			100

The Employer will apply cut-off score evaluation system for technical evaluation and therefore only bidders who score minimum seventy percent (70) points will be considered technically responsive and successfully pass the technical evaluation. Thus, Bids that fail to score more than seventy (70) points in technical evaluation would not be considered for total evaluation with price evaluation.

1.1.1 Experience (30 Points)

For contracts signed in currencies other than US dollars, to apply the telegraphic transfer selling rate displayed by any reputable bank on the date of Contract signing, for conversion into US dollars.

In case of previous projects conducted as a joint venture or association, the number and value of projects shall be added up in proportion to the shareholding ratio. The shareholding ratio shall be mentioned in the Information Sheet.

In case the bidder forms a JVA in accordance with ITB 4.1 for the current bid, the experience (number and value) of the bidder will be calculated by summing up the experience of each JV member in proportion to their shareholding ratio in this bidding.

The Bidder should submit with project completion experience certification issued by employer or reputable institutions authorized by the Korean government for managing and recording the company experiences. The certificate shall mention the shareholding ratio of the bidder.

1.1.1.a The contract value of PV System (Standalone or Grid-Tied type) for recent 10 years (10 Points)

The sum of contract value (USD Million) of PV power projects for recent ten (10) years prior to the submission date of this bid either in domestic or overseas.	$x \geq 30$	$30 > x \geq 20$	$20 > x \geq 10$	$10 > x$
Score	10	9	8	7

Note 1 : PV projects include EPC(Engineering, Procurement, Construction) contracts that bidders have completed.

Note 2 : If bidders participate as JVA, combined experience according to their JVA shareholding ratio is acceptable.

1.1.1.b The number of PV projects (Standalone or Grid-Tied type) for recent 10 years (10 Points)

The number of PV projects (Standalone or Grid-tied type) that the bidder has completed for recent ten (10) years prior to the submission date of this bid either in domestic or overseas.	$x \geq 6$	$6 > x \geq 3$	$3 > x$
Score	10	9	8

Note 1 : PV projects include EPC(Engineering, Procurement, Construction) contracts that bidders have completed.

Note 2 : If bidders participate as JVA, combined experience according to their JVA shareholding ratio is acceptable.

1.1.1.c The contract value of overseas Power plant Projects for recent 10 years

The Sum of contract value (USD Million) of Power Plant projects for recent ten(10) years prior to the submission date of this bid in overseas.	$x \geq 50$	$50 > x \geq 40$	$40 > x \geq 30$	$30 > x$
Score	10	9	8	7

Note 1 : PV projects include EPC(Engineering, Procurement, Construction) contracts that bidders have completed.

Note 2 : If bidders participate as JVA, combined experience according to their JVA shareholding ratio is acceptable.

1.1.2 Technical Evaluation (60 Points)

The following rating system shall be applied to 1.1.2.1 through 1.1.2.3:

* Excellent: 100%, Good: 85%, Average: 70%, Below average: 55%, Poor: 40%

1.1.2.1 Project Approach and Methodology (10 Points)

Submission requirement;

Bidders should submit its proposal in the Section IV. Bidding Forms: Technical Proposal – Project Approach and Methodology.

Bidders should be able to demonstrate and describe the project approach and methodology to design and build PV system (stand-alone).optimized to the project site and regional environment.

No	Items	Max. Point	Evaluation standard
1.1.2.1.a	Understanding of the Project	2.5*	Understanding of the project goals. Appropriateness of project scale, scope and regional status Status of power supply and demand
1.1.2.1.b	Understanding of the site condition in project	2.5*	Understanding of the site condition. Field details
1.1.2.1.c	Project management plan	5*	Suitability of following items:
		1.5	Site operation and organization plan.
		1.5	Equipment and material supply & transportation plan
		1	Safety and Security plan
		0.50	QC & Environment Management plan
		0.25	Commissioning & Test plan
		0.25	Education & Training plan
Total		10	

1.1.2.2 Construction Plan of PV system (Standalone or Grid-Tied) (20 Points)

Construction plan will be evaluate according to the following criteria:

Submission requirement;

Bidders should submit its proposal in the Section IV. Bidding Forms: Technical Proposal – Construction plan of PV system (stand-alone).

Bidders should be able to demonstrate and describe the project approach and methodology to design and build PV system (stand-alone) optimized to the project site and regional environment.

No	Items	Max. Point	Evaluation standard
1.1.2.2.a	Detail design and engineering plan	10* 3 7	Suitability of following items Climate condition factors Detail design, configuration and layout plan
1.1.2.2.b	Detail construction plan	10* 4 2 2 2	Suitability of following items Construction master schedule, regional schedule and municipality Detail installation technology and method (Equipment and Electric works) Structure and foundation plan Civil works plan
Total		20	

1.1.2.3 Appropriateness of specification and Operation Plan (30 Points)

Submission requirement;

Bidders should submit its proposal in the Section IV. Bidding Forms: Technical Proposal – Appropriateness of specification and performance.

No	Items	Max. Point	Evaluation standard
1.1.2.3.a	Performance of equipment	20* 6 6 4 4	Performance of bidder's proposed equipment compared with Employer's technical requirement for following equipment PV module Solar Controller Inverter Battery
1.1.2.3.b	Operation and Maintenance Support Plan	10* 1 3 4 2	System operation and maintenance Support technology and method O&M Manual Plan O&M localization plan Training program of O&M engineer Invitational Education program of local O&M engineer
Total		30	

1.1.3 Key Personnel (10 Points)

The Bidder must demonstrate that it has site organization and the personnel for the key positions that meet the following requirements:

Key personnel will be evaluated according to the following table:

No.	Position	Total work experience		Experience in similar work		Maximum points
		Years	Points	The number of similar works	Points	
1	Project Manager	≥20 20 > x ≥ 15 15 > x ≥ 10 < 10	2 1.5 1 0.5	≥ 15 15 > x ≥ 10 10 > x ≥ 5 < 5	2 1.5 1 0.5	4
2	Electrical Engineer (4)*	≥ 15 15 > x ≥ 10 10 > x ≥ 5 < 5	2 1 0.7 0.3	≥ 10 10 > x ≥ 7 7 > x ≥ 5 < 5	2 1 0.7 0.3	4
3	Civil Engineer(2)*	≥ 15 15 > x ≥ 10 10 > x ≥ 5 < 5	1 0.7 0.5 0.3	≥ 10 10 > x ≥ 7 7 > x ≥ 5 < 5	1 0.7 0.5 0.3	2
Total						10

* Each professional will be evaluated independently, according to the specialty and then the average will be obtained, among the number of professionals required.

1. Similar work means experience of PV Standalone or Grid-tied type as design, construction, or construction supervision, etc.
2. Project manager must have at least one(1) overseas work experiences.
3. The Bidder shall provide documentary evidence for key personnel evaluation which shall be issued by employer or reputable institutions authorized by Korean government for managing and recording the engineer experiences.

The Bidder shall provide details of the proposed personnel and their experience records using Forms included in Section IV, Bidding Forms. If a bidder fails to submit adequate certificate such as proof of employment, work experience and other related documents, no score is given to the Key personnel.

1.2 Economic Evaluation

The Economic Evaluation shall be conformed to the lowest evaluated bid, which is substantially responsive to the bidding document and exceeds the minimum score on its technical evaluation.

2. Qualification

Factor	2.1 Eligibility					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture (existing or intended)			
	All members combined		Each Partner	At least one Partner		
2.1.1 Nationality	Nationality in accordance with ITB 4.2.	Must meet requirement	must meet requirement	Must meet requirement	Not Applicable	Form ELI –1.1 and 1.2, with attachments
2.1.2 Conflict of Interest	No- conflicts of interests as described in ITB 4.2	Must meet requirement	must meet requirement	Must meet requirement	Not Applicable	Letter of Bid
2.1.3 Bank Ineligibility	Not having been declared ineligible by the Bank as described in 4.5.	Must meet requirement	must meet requirement	Must meet requirement	Not Applicable	Letter of Bid
Factor	2.2 Historical Contract Non-Performance					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture (existing or intended)			
	All members combined		Each member	At least one member		

2.2.1 History of non-performing contracts	Non-performance ¹ of a contract did not occur within the last (5) years prior to the deadline for application submission, based on all information on fully settled disputes or litigation. A fully settled dispute or litigation is one that has been resolved in accordance with the Dispute Resolution Mechanism under the respective contract, and where all appeal instances available to the Bidder have been exhausted.	Must meet requirement by itself or as member to past or existing JV	Not Applicable	Must meet requirement ²	Not Applicable	Form CON - 2
2.2.2 Suspension	Not under suspension based on execution of a Bid Securing Declaration or Proposal Securing Declaration pursuant to ITB 4.7 and ITB 20.9	Must meet requirement	Must meet requirement	Must meet requirement	Not Applicable	Letter of Bid

¹ Nonperformance, as decided by the Employer, shall include all contracts where (a) nonperformance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Nonperformance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Nonperformance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

² This requirement also applies to contracts executed by the Bidder as JV member.

2.2.3Pending Litigation	Bid’s financial position and prospective long term profitability still sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder	Must meet requirement	Not Applicable	Must meet requirement	Not Applicable	Form CON – 2
2.2.4Litigation History	No consistent history of court/arbitral award decisions against the Bidder ³ since 1 st January 2010	Must meet requirement	Must meet requirement	Must meet requirement	Not Applicable	Form CON – 2
Factor	2.3 Financial Situation					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder			Joint Venture (existing or intended)	
		Single Entity	All members combined	Each member		

³ The Bidder shall provide accurate information on the related Letter of Bid about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five years. A consistent history of awards against the Bidder or any member of a joint venture may result in failure of the Bid.

2.3.1 Financial Capabilities	Submission of audited balance sheets or if not required by the law of the Bidder's Country, other financial statements acceptable to the Employer, for the last three(2015,2016 and 2017) years to demonstrate the current soundness of the Bidders financial position and its prospective long term profitability.	Must meet requirement	Not Applicable	Must meet requirement	Not Applicable	Form FIN – 3.1 with attachments
2.3.2Average Annual Turnover	Minimum average annual turnover in US\$ 20Million calculated as total certified payments received for contracts in progress or completed, for the last three (3) years	Must meet requirement	Must meet requirement	Not Applicable	Must meet 60% of the requirement	Form FIN –3.2

2.3.3 Financial Resources	Using Forms FIN – 3 and FIN - 4 in Section 4 (Bidding Forms) the Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet: (1) the following cash-flow requirement, US\$5 Million and (2) the overall cash flow requirements for this contract and its current Plant and Services commitment.	Must meet requirement	Must meet requirement	Not applicable	Must meet (60%) Requirement	Form FIN –3.3
Factor	2.4 Experience					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture (existing or intended)			
			All members combined	Each member	At least one member	
2.4.1General Experience	Experience under construction contracts in the role of contractor, subcontractor, or management contractor for	must meet requirement	Not applicable	Not applicable	(JVA leading Firm) must meet requirement	Form EXP-4.1

	general construction for at least the recent ten (10) years prior to the applications submission deadline either in or its outside of its country of origin.					
2.4.2 (a) Specific Experience (Contract of similar size)	Participation in at least one (1) single PV EPC contract amounting to equal to or more than USD 3million as contractor. The contract above mentioned must be successfully completed within ten (10) years prior to the submission date of this bid.	Must meet requirement	Not applicable	Not applicable	(JVA leading Firm) must meet requirement	Form EXP 4.2(a)
	* Bidders should submit the certification of contract completion issued by employer or reputable institutions. * Currency of each contract shall be converted into a US dollar, using the selling exchange rates established by the source and on the date specified in the Bid Data Sheet, ITB 33.1					

2.5 Personnel

The Bidder must demonstrate that it has the personnel for the key positions that meet the following requirements:

No.	Position	Quantity	Total working experience (years)	Experience in Similar Work (PJT)
1	Project Manager	1	8	3
2	Electrical Engineer	4	3	3
3	Civil Engineer	2	3	3

1. Similar work means experience of PV Standalone or Grid-tied type as design, construction, or construction supervision, etc.
2. Project manager must have at least one (1) overseas work experiences.
3. The Bidder shall provide documentary evidence for key personnel evaluation which shall be issued by employer or reputable institutions authorized by Korean government for managing and recording the engineer experiences.

2.6 Equipment

The Bidder must demonstrate that it will have access to the key Contractor's equipment listed hereafter:

No.	Equipment Type and Characteristics	Minimum Number required
1		
2		
3		
...		

The Bidder shall provide further details of proposed items of equipment using the relevant Form in Section IV.

2.7 Subcontractors

Subcontractors/manufacturers for the following major items of supply or services ('Specialized Subcontractors') must meet the following minimum criteria, herein listed for that item:

Item No.	Description of Item	Minimum Criteria to be met
1	Solar Module	<ul style="list-style-type: none"> - Bidders shall furnish copies of Korea New-Renewable Energy Facility Certificates or equivalent certificates. - The manufacture of the Solar Module shall prove its capability to manufacture major components such as cell and module in the eligible country (Republic of Korea).

2	Controller & PV Inverter	<ul style="list-style-type: none"> - Those equipment shall be manufactured in the eligible country (Republic of Korea). - PV inverter shall be the standalone type. - Bidder shall furnish copies of Test Report Certificate from Korean Testing Laboratory or equivalent certificates.
3	Battery	<ul style="list-style-type: none"> - The equipment shall be manufactured in the eligible country (Republic of Korea). - Bidder shall furnish copies of Certificates .
4	Common*	<ul style="list-style-type: none"> - Manufacturer's Authorization for the Bidders to supply the proposed item to the Employer. - Proof that the manufacture or producer has facility and capacity in the eligible country(Republic of Korea) to manufacture the proposed equipment. - Contract agreement, Catalog, and Brochure, if any - Certificate, and Test report before construction - Supply records of the manufacturer

* Applied to items No. 1~3 above.

Failure to comply with this requirement will result in rejection of the subcontractor.

The Bidder is responsible for ensuring that the manufacturer or producer complies with the requirements of ITB 4 and 5 and meets the minimum criteria listed above for that item.

Section IV - Bidding Forms

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Letter of Bid

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

The Bidder must prepare this Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text is to help Bidders in preparing this form.

Date of this Bid submission: *[insert date (as day, month and year) of Bid submission]*

RFB No.: *[insert number of RFB process]*

Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[insert complete name of Employer]*

- (a) **No reservations:** We have examined and have no reservations to the bidding document, including Addenda issued in accordance with ITB 8;
- (b) **Eligibility:** We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) **Bid-Securing Declaration:** We have not been suspended nor declared ineligible by the Employer based on execution of a Bid Securing Declaration or Proposal-Securing Declaration in the Employer's Country in accordance with ITB 4.7;
- (d) **Conformity:** We offer to provide design, supply and installation services in conformity with the bidding document of the following: *[insert a brief description of the Plant, Design, Supply and Installation Services]*;
- (e) **Bid Price:** The total price of our Bid, excluding any discounts offered in item (f) below is:
[Insert one of the options below as appropriate]

Option 1, in case of one lot: Total price is: *[insert the total price of the Bid in words and figures, indicating the various amounts and the respective currencies]*;

Or

Option 2, in case of multiple lots: (a) Total price of each lot *[insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]*; and (b) Total price of all lots (sum of all lots) *[insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies]*;

- (f) **Discounts:** The discounts offered and the methodology for their application are:

- (i) The discounts offered are: *[Specify in detail each discount offered.]*

- (ii) The exact method of calculations to determine the net price after application of discounts is shown below: *[Specify in detail the method that shall be used to apply the discounts];*
- (g) **Bid Validity Period:** Our Bid shall be valid for the period specified in BDS 19.1 (as amended if applicable) from the date fixed for the Bid submission deadline specified in BDS 23.1 (as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (h) **Performance Security:** If our Bid is accepted, we commit to obtain a Performance Security in accordance with the bidding document;
- (i) **One Bid Per Bidder:** We are not submitting any other Bid(s) as an individual Bidder, and we are not participating in any other Bid(s) as a Joint Venture member, and meet the requirements of ITB 4.3, other than alternative Bids submitted in accordance with ITB 13;
- (j) **Suspension and Debarment:** We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the EDCF or a debarment imposed by the EDCF in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the EDCF and other development banks. Further, we are not ineligible under the Employer's Country laws or official regulations or pursuant to a decision of the United Nations Security Council;
- (k) **State-owned enterprise or institution:** *[select the appropriate option and delete the other]*
[We are not a state-owned enterprise or institution] / [We are a state-owned enterprise or institution but meet the requirements of ITB 4.6];
- (l) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the Bidding process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

- (m) **Binding Contract:** We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
- (n) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated cost Bid, the Most Advantageous Bid or any other Bid that you may receive; and

- (o) **Fraud and Corruption:** We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption.

Name of the Bidder: *[insert complete name of person signing the Bid]

Name of the person duly authorized to sign the Bid on behalf of the Bidder: **[insert complete name of person duly authorized to sign the Bid]

Title of the person signing the Bid: [insert complete title of the person signing the Bid]

Signature of the person named above: [insert signature of person whose name and capacity are shown above]

Date signed [insert date of signing] **day of** [insert month], [insert year]

Schedule of Rates and Prices

Schedule No. 1. Plant and Mandatory Spare Parts Supplied from Abroad

Note: Bidders shall provide equipment having equal or greater specification. The bidders will present in their offer the amounts of the total proposed materials per community. This table of quantities is estimated. The quantities in table are the minimum and bidders can be provided in excess.

Item	Description	Size	Unit	Quantity	Code ¹	Foreign (US\$)		Local (Applicable currency)		Total Price (US\$)
						Rate	Amount	Rate	Amount	
1.1	Main Equipment									
1.1.1	Module solar	250Wp	Set	10,916						
1.1.2	Controller	12V 20A MPTT	Set	10,172						
1.1.3	Controller	12V 60A MPTT	Set	328						
1.1.4	Controller	12V 80A MPTT	Set	22						
1.1.5	Inverter	12V 250W	Set	10,172						
1.1.6	Inverter	12V 700W	Set	328						
1.1.7	Inverter	12V 400W	Set	22						
1.1.8	Battery	12V 200Ah type: Gel	Set	10,938						
1.1.9	Battery Cabinet	W770 x D710 x H500	Set	10,500						
1.1.10	Battery Cabinet	W770 x D710 x H660	Set	22						
1.1.11	Combiner Box	2CH	Set	328						
1.1.12	Combiner Box	4CH	Set	22						
1.1.13	Panel Control Distribution	4Circuit	Set	10,522						

Schedule of Rates and Prices

Schedule No. 1. Plant and Mandatory Spare Parts Supplied from Abroad

Note: Bidders shall provide equipment having equal or greater specification. The bidders will present in their offer the amounts of the total proposed materials per community. This table of quantities is estimated. The quantities in table are the minimum and bidders can be provided in excess.

Item	Description	Size	Unit	Quantity	Code ¹	Foreign (US\$)		Local (Applicable currency)		Total Price (US\$)
						Rate	Amount	Rate	Amount	
1.2	Materials for electrical works (cables)									
1.2.1	Power cable	0.6/1kV F-CV 6 mm²-2C x 3L (8 AWG)	M	812,035						
1.2.2	power outlet cable	HFIX 6 mm² x 3L (8 AWG)	M	294,616						
1.2.3	lighting cable	HFIX 4 mm² x 3L (12 AWG)	M	959,606						
1.2.4	Ground cable	F-GV 6 mm² x 1L (AWG 8)	M	812,145						
1.3	Materials for electrical works (other accessorial components)									
1.3.1	Lighting	AC lamps LED (5W/110V)	EA	33,316						
1.3.2	Lighting Fixture	AC 110 V	EA	33,316						
1.3.3	ELP Conduit	30Φ	M	242,006						
1.3.4	HI-PVC	16C (1/2")	M	330,032						
1.3.5	HI-PVC	22C (3/4")	M	467,278						
1.3.6	Ground rod	Φ14*1000mmx1ea	EA	10,522						
1.3.7	Switch	Disconnection, For one	EA	31,216						
1.3.8	Switch Box	44mm	EA	31,216						
1.3.9	Electrical Outlet	1P, General Ground, For 2 Outlets	EA	21,044						
1.3.10	Pull Box	100x100x50	EA	10,522						
1.3.11	Warning tape	Low Voltage	M	210,440						

Schedule of Rates and Prices

Schedule No. 1. Plant and Mandatory Spare Parts Supplied from Abroad

Note: Bidders shall provide equipment having equal or greater specification. The bidders will present in their offer the amounts of the total proposed materials per community. This table of quantities is estimated. The quantities in table are the minimum and bidders can be provided in excess.

Item	Description	Size	Unit	Quantity	Code ¹	Foreign (US\$)		Local (Applicable currency)		Total Price (US\$)
						Rate	Amount	Rate	Amount	
1.4	Structure (Support Fixture)									
1.4.1	Plate	250*250*9THot DIP Galvanized	EA	10,172						
1.4.2	Plate	50*100*6T Hot DIP Galvanized	EA	42,176						
1.4.3	Plate	100*250*9T Hot DIP Galvanized	EA	21,088						
1.4.4	Box pipe	100*40*2.6T Hot DIP Galvanized	M	20,738						
1.4.5	Box pipe	40*40*2.6THot DIP Galvanized	M	53,464						
1.4.6	Box pipe	100*100*3.2THot DIP Galvanized	M	21,088						
1.4.7	C Channel	41×25×2TX40LHot DIP Galvanized	EA	43,664						
1.4.8	Angle	50*50*4THot DIP Galvanized	M	10,500						
1.4.9	Fence	9 sections H:2m, 1 section H:1m and door H:1m. Foundation Concrete 210 kg/cm2.	Set	22						
Total										

Name of Bidder _____

Signature of Bidder _____

Country of Origin Declaration Form

Item	Description	Code	Country

Schedule No. 2. Plant and Mandatory Spare Parts Supplied from Within the Employer's Country

Note: Bidders shall provide equipment having equal or greater specification. The bidders will present in their offer the amounts of the total proposed materials per community. This table of quantities is estimated. The quantities in table are the minimum and bidders can be provided in excess.

Item	Description		Qty.		EXW Unit Price (Foreign US\$)	EXW Unit Price (LocalCurrency)	Sales and other taxes payable per line item if Contract is awarded (US\$)		Total Price (US\$)
2.1	Foundation								
2.1.1	Anchor bolt & Nut & Washer	M16x500L Grado 8 ASTM-325	EA	42,176					
2.1.2	Stirrup	D10 ASTM A 615 Grade 40	M	31,632					
2.1.3	Bolt & Nut & Washer	M6*20L Grado 8 ASTM-325	EA	43,664					
2.1.4	Bolt & Nut Washer	M14*130L Grado 8 ASTM-325	EA	31,588					
2.1.5	Bolt & Nut Washer	M14*60L Grado 8 ASTM-325	EA	53,812					
2.1.6	Anti-Corrosive polyurethane Paint		Gls	350					
2.2	Concrete 210 kg/cm2								
2.2.1	Cement	Portland I, Weight bags 42.5 kg	EA	13,678					
2.2.2	Sand		m3	930					
2.2.3	Gravel	Φ 13	m3	1,395					
2.2.4	Water		m3	299					

2.2.5	concrete accelerator additive		Gls	400				
			Total					

Schedule No. 3. Design Services

Item	Description	Qty.	Unit	Foreign (US\$)		Local (Applicable currency)		Total Price (US\$)
				Rate	Amount	Rate	Amount	
3.1	Final Detailed Design							
3.1.1	Review of the Final Design of Civil Works	1	Lump sum					
3.1.2	Review of the Final Design of the Electromechanical Works	1	Lump sum					
	SUB-TOTAL							
3.2	Education & Training							
3.2.1	a) Local Training to the operator's personnel (15) in order that they know how to operate and maintain the different equipment supplied in the project.	1	Lump sum					
	b) Visit of the Technical Staff to Manufacturer Plants of the supplies in Korea (4 Persons x 15 days). Include food, hotels, tickets by air, transport, etc).							
	c) Visit of the Technical Staff to Manufacturer Plants of the supplies in Korea prior to test and shipment to Nicaragua (4 Persons x 15 days). Include food, hotels, tickets by air, transport, etc).							
3.3	O&M Support (1 Year)							
	SUB-TOTAL							

TOTAL						
--------------	--	--	--	--	--	--

Name of Bidder _____

Signature of Bidder _____

Schedule No. 4. Installation and Other Services

Item	Description	Qty.	Foreign (US\$)		Local (Applicable currency)		Total Price (US\$)
			Rate	Amount	Rate	Amount	
4.1	Main Equipament	1					
4.2	Material for electrical works (cables)	1					
4.3	Other component electrical (accessories)	1					
4.4	Structure (Soporte Fixture)	1					
4.5	Civil Works (Foundation: Excavation, compacted fill, concrete 210 kg/cm2 and form. Include fence	1					
4.6	Partes y Repuestos (Shedule 6)	1					
4.7	Testing and Comissioning	1					
4.8	Transport local	1					
4.9	Others Services	1					
TOTAL							

Name of Bidder _____

Signature of Bidder _____

Schedule No. 5. Grand Summary

Item	Description	Foreign (US\$)		Local (Applicable currency)		Total Price (US\$)
		Rate	Amount	Rate	Amount	
	Total Schedule No.1. Plant, and Mandatory Spare Parts Supplied from Abroad					
	Total Schedule No.2. Plant, and Mandatory Spare Parts Supplied from Within the Employer's Country					
	Total Schedule No.3. Design Services					
	Total Schedule No.4. Installation and Other Services(Education & Training)					

Name of Bidder _____

Signature of Bidder _____

Schedule No. 6. Mandatory Spare Parts

Item	Description	Qty.	Unit Price U(US\$)		Total Price (US\$)
			CIF or CIP (foreign parts)	EXW (local parts)	
		(1)	(2)	(3)	(1) x (2) or(3)
6.1	Photovoltaic module 250W	546			
6.2	Inverter AC/DC 12V 250W	509			
6.3	Inverter AC/DC 12V 700W	17			
6.4	Inverter AC/DC 12V 400W	1			
6.5	Controller12V 20A	509			
6.6	Controller12V 60A	16			
6.7	Controller12V 80A	1			
6.8	Battery 12V 200Ah	219			
6.9	Lighting AC lamps(5W)	1,666			
6..10	SPD 20 kA	211			
6.11	SPD 100V/ 40 kA	7			
6.12	FUSES 100V/15 A	37			
6.13	Breakers Tipo ELB of 2P y 30 AF/20AT	842			
TOTAL					

Name of Bidder _____

Signature of Bidder _____

Price Adjustment

Not Applicable (is Turnkey contract).

Where the Contract Period (excluding the Defects Liability Period) exceeds eighteen (18) months, it is normal procedure that prices payable to the Contractor shall be subject to adjustment during the performance of the Contract to reflect changes occurring in the cost of labor and material components. In such cases the bidding document shall include in this form a formula of the following general type, pursuant to PCC Sub-Clause 11.2.

Where Contracts are of a shorter duration than eighteen (18) months or in cases where there is to be no Price Adjustment, the following provision shall not be included. Instead, it shall be indicated under this form that the prices are to remain firm and fixed for the duration of the Contract.

Sample Price Adjustment Formula

Not Applicable.

If in accordance with GCC 11.2, prices shall be adjustable, the following method shall be used to calculate the price adjustment:

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of labor and material components, in accordance with the following formula:

$$P_1 = P_0 \times \left(a + b \frac{L_1}{L_0} + c \frac{M_1}{M_0} \right) - P_0$$

in which:

P_1 = adjustment amount payable to the Contractor

P_0 = Contract price (base price)

a = percentage of fixed element in Contract price (a = %)

b = percentage of labor component in Contract price (b = %)

c = percentage of material and equipment component in Contract price ($c = \%$)

L_0, L_1 = labor indices applicable to the appropriate industry in the country of origin on the base date and the date for adjustment, respectively

M_0, M_1 = material and equipment indices in the country of origin on the base date and the date for adjustment, respectively

N.B. $a+b+c = 100\%$.

Conditions Applicable To Price Adjustment

Not Applicable.

The Bidder shall indicate the source of labor, source of exchange rate and materials indices and the base date indices in its bid.

<u>Item</u>	<u>Source of Indices Used</u>	<u>Base Date Indices</u>
-------------	-------------------------------	--------------------------

The base date shall be the date thirty (30) days prior to the Bid closing date.

The date of adjustment shall be the mid-point of the period of manufacture or installation of component or Plant.

The following conditions shall apply:

- (a) No price increase will be allowed beyond the original delivery date unless covered by an extension of time awarded by the Employer under the terms of the Contract. No price increase will be allowed for periods of delay for which the Contractor is responsible. The Employer will, however, be entitled to any price decrease occurring during such periods of delay.
- (b) If the currency in which the Contract price, P_0 , is expressed is different from the currency of the country of origin of the labor and/or materials indices, a correction factor will be applied to avoid incorrect adjustments of the Contract price. The correction factor shall be: Z_0 / Z_1 , where,

Z_0 = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P_0 on the Base date, and

Z_1 = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P_0 on the Date of Adjustment.

- (c) No price adjustment shall be payable on the portion of the Contract price paid to the Contractor as an advance payment.

Technical Proposal

Project Approach and Methodology

Understanding of the Project

1. Understanding of the project goals.
2. Appropriateness of project scale, scope and regional status
3. Status of power supply and demand

Understanding of the site condition in project

1. Understanding of the site condition.
2. Field details

Project management plan

1. Site operation and organization plan.
2. Equipment and material supply & transportation plan
3. Safety and Security plan
4. QC & Environment Management plan
5. Commissioning & Test plan
6. Education & Training plan

Construction Plan of PV Power system

Detail design and engineering plan

1. Climate condition factors
2. Detail design, configuration and layout plan

Detail construction plan

1. Construction master schedule, regional schedule and municipality
2. Detail installation technology and method (Equipment and Electric works)
3. Structure and foundation plan
4. Civil works plan

Appropriateness of Specification and Operation Plan

Performance of equipment

1. PV module
2. Solar Controller
3. Inverter
4. Battery

Operation and Maintenance Support Plan

1. O&M Manual
2. O&M localization plan

3. Training program of O&M engineer
4. Invitational Education program of local O&M engineer

Proposed Subcontractors for Major Items of Plant and Installation Services

Others

Contractor's Equipment

Form EQU

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key Contractor's equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured </div>	

Omit the following information for equipment owned by the Bidder.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

Functional Guarantees

Form FUNC

The Bidder shall copy in the left column of the table below, the identification of each functional guarantee required in the Specification and stated by the Employer in para. 1.2 (c) of Section III, Evaluation and Qualification Criteria, and in the right column, provide the corresponding value for each functional guarantee of the proposed plant and equipment.

Required Functional Guarantee	Value of Functional Guarantee of the Proposed Plant and Equipment
1.	
2.	
3.	
...	

Personnel

Form PER -1

Proposed Personnel

Bidders should provide the names of suitably qualified personnel to meet the specified requirements stated in Section III. The data on their experience should be supplied using the Form below for each candidate.**

1.	Title of position*
	Name
2.	Title of position*
	Name
3.	Title of position*
	Name
4.	Title of position*
	Name

*As listed in Section III.

** To support the aforementioned information, the curriculum vitae must be attached

Form PER-2

Resume of Proposed Personnel

Name of Bidder

Position		
Personnel information	Name	Date of birth
	Professional qualifications	
Present employment	Name of employer	
	Address of employer	
	Telephone	Contact (manager / personnel officer)
	Fax	E-mail
	Job title	Years with present employer

Summarize professional experience over the last 20 years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

[illegible]

Proposed Subcontractors for Major Items of Plant and Installation Services

A list of major items of Plant and Installation Services is provided below.

The following Subcontractors and/or manufacturers are proposed for carrying out the item of the facilities indicated. Bidders are free to propose more than one for each item

Major Items of Plant and Installation Services	Proposed Subcontractors/Manufacturers	Nationality

Others - Time Schedule

(to be used by Bidder when alternative Time for **Completion** is invited in ITB 13.2)

Bidders Qualification without prequalification

To establish its qualifications to perform the contract in accordance with Section III, Evaluation and Qualification Criteria the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

Form ELI 1.1

Bidder Information Sheet

Date: _____

RFB No.: _____

Page _____ of _____ pages

1. Bidder's Legal Name
2. In case of JV, legal name of each party:
3. Bidder's actual or intended Country of Registration:
4. Bidder's Year of Registration:
5. Bidder's Legal Address in Country of Registration:
6. Bidder's Authorized Representative Information Name: Address: Telephone/Fax numbers: Email Address:

7. Attached are copies of original documents of

- ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.4
- ☐ In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1
- ☐ In case of state-owned enterprise or institution, in accordance with ITB 4.6, documents establishing:
 - Legal and financial autonomy
 - Operation under commercial law
 - Establishing that the Bidder is not under the supervision of the Employer

8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. *[If required under BDS ITB 46.1, the successful Bidder shall provide additional information on beneficial ownership, using the Beneficial Ownership Disclosure Form.]*

Form ELI 1.2

Party to JV Information Sheet

Date: _____

RFB No.: _____

Page _____ of _____ pages

1. Bidder's Legal Name:

2. JV's Party legal name:

3. JV's Party Country of Registration:

4. JV's Party Year of Registration:

5. JV's Party Legal Address in Country of Registration:

6. JV's Party Authorized Representative Information

Name:

Address:

Telephone/Fax numbers:

Email Address:

7. Attached are copies of original documents of

- ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.4.
- ☐ In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Employer, in accordance with ITB 4.6.

8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. *[If required under BDS ITB 46.1, the successful Bidder shall provide additional information on beneficial ownership for each JV member using the Beneficial Ownership Disclosure Form.]*

Form CON – 2

Historical Contract Non-Performance

Bidder's Legal Name: _____

Date: _____

JV Member Legal Name: _____

RFB No.: _____

Page _____ of _____ pages

Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria

- ☐ Contract non-performance did not occur since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1.
- ☐ Contract(s) not performed since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1

Year	Non- performed portion of contract	Contract Identification	Total Contract Amount (current value, currency, exchange rate and US\$ equivalent)
<i>[insert year]</i>	<i>[insert amount and percentage]</i>	Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i> Name of Employer: <i>[insert full name]</i> Address of Employer: <i>[insert street/city/country]</i> Reason(s) for nonperformance: <i>[indicate main reason(s)]</i>	<i>[insert amount]</i>

Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria

- ☐ No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3.
- ☐ Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below.

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount (currency), USD Equivalent (exchange rate)
		Contract Identification: Name of Employer: Address of Employer: Matter in dispute: Party who initiated the dispute: Status of dispute:	
		Contract Identification: Name of Employer: Address of Employer: Matter in dispute: Party who initiated the dispute: Status of dispute:	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria			
<input type="checkbox"/> No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4.			
<input type="checkbox"/> Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below.			
Year of award	Outcome as percentage of Net Worth	Contract Identification	Total Contract Amount (currency), USD Equivalent (exchange rate)

<i>[insert year]</i>	<i>[insert percentage]</i>	<p>Contract Identification: [indicate complete contract name, number, and any other identification]</p> <p>Name of Employer: <i>[insert full name]</i></p> <p>Address of Employer: <i>[insert street/city/country]</i></p> <p>Matter in dispute: <i>[indicate main issues in dispute]</i></p> <p>Party who initiated the dispute: <i>[indicate “Employer” or “Contractor”]</i></p> <p>Reason(s) for Litigation and award decision <i>[indicate main reason(s)]</i></p>	<i>[insert amount]</i>
----------------------	----------------------------	--	------------------------

Form CCC

Current Contract Commitments / Works in Progress

Bidders and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Name of contract	Employer, contact address/tel/fax	Value of outstanding work (current US\$ equivalent)	Estimated completion date	Average monthly invoicing over last six months (US\$/month)
1.				
2.				
3.				
4.				
5.				
etc.				

Form FIN – 3.1

Financial Situation

Historical Financial Performance

Bidder's Legal Name: _____

Date: _____

JV Member Legal Name: _____

RFB No.: _____

Page _____ of _____ pages

To be completed by the Bidder and, if JV, by each member

Financial information in US\$ equivalent	Historic information for previous _____ () years (US\$ equivalent in 000s)						
	Year 1	Year 2	Year 3	Year ...	Year n	Avg.	Avg. Ratio
Information from Balance Sheet							
Total Assets (TA)							
Total Liabilities (TL)							
Net Worth (NW)							
Current Assets (CA)							
Current Liabilities (CL)							
Information from Income Statement							
Total Revenue (TR)							
Profits Before Taxes (PBT)							

Attached are copies of financial statements (balance sheets, including all related notes, and income statements) for the years required above complying with the following conditions:

- (a) Must reflect the financial situation of the Bidder or member to a JV, and not sister or parent companies
- (b) Historic financial statements must be audited by a certified accountant firm.
- (c) Historic financial statements must be complete, including all notes to the financial statements
- (d) Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted)

Form FIN – 3.2

Average Annual Turnover

Bidder's Legal Name: _____

Date: _____

JV Member Legal Name: _____

RFB No.: _____

Page _____ of _____ pages

Annual turnover data		
Year	Amount and Currency	US\$ equivalent
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
*Average Annual Turnover	_____	_____

*Average annual turnover calculated as total certified payments received for work in progress or completed, divided by the number of years specified in Section III, Evaluation Criteria, Sub-Factor 2.3.2.

Form FIN3.3**Financial Resources**

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total cash flow demands of the subject contract or contracts as indicated in Section III, Evaluation and Qualification Criteria

Source of financing	Amount (US\$ equivalent)
1.	
2.	
3.	
4.	

Form EXP 4.1

Experience**General Experience**

Bidder's Legal Name: _____

Date: _____

JV Member Legal Name: _____

RFB No.: _____

Page _____ of _____ pages

Starting Month / Year	Ending Month / Year	Years*	Contract Identification	Role of Bidder
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____ —
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____ —
_____	_____	_____	Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____ —

Starting Month / Year	Ending Month / Year	Years*	Contract Identification	Role of Bidder
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____ -
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____ -
_____	_____		Contract name: Brief Description of the Works performed by the Bidder: Name of Employer: Address:	_____ -

*List calendar year for years with contracts with at least nine (9) months activity per year starting with the earliest year

Form EXP –4.2(a)

Specific Experience

Bidder's Legal Name: _____

Date: _____

JV Member Legal Name: _____

RFB No.: _____

Page _____ of _____ pages

Similar Contract Number: ____ of ____ required.	Information		
Contract Identification	_____		
Award date	_____		
Completion date	_____		
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor
Total contract amount	_____		US\$ _____ –
If member in a JV or subcontractor, specify participation of total contract amount	_____ %	_____	US\$ _____
Employer's Name:	_____		
Address:	_____ _____ _____		
Telephone/fax number:	_____ _____		
E-mail:	_____		

Form EXP –4.2(a) (cont.)

Specific Experience (cont.)

Bidder's Legal Name: _____

Page _____ of _____ pages

JV Member Legal Name: _____

Similar Contract No. __[insert specific number] of [total number of contracts] __ required	Information
Description of the similarity in accordance with Sub-Factor 4.2a) of Section III:	
Amount	_____
Physical size	_____
Complexity	_____
Methods/Technology	_____
Physical Production Rate	_____

Form EXP –4.2(b)

Specific Experience in Key Activities

Bidder's Legal Name: _____

Date: _____

JV Member Legal Name: _____

RFB No.: _____

Subcontractor's Legal Name: _____

Page _____ of _____ pages

	Information		
Contract Identification	_____		
Award date	_____		
Completion date	_____		
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor
Total contract amount	_____		US\$ _____
If member in a JV or subcontractor, specify participation of total contract amount	_____ %	_____	US\$ _____
Employer's Name:	_____		
Address:	_____ _____ _____		
Telephone/fax number:	_____ _____		
E-mail:	_____		

Form EXP -4.2 (b)(cont.)

Specific Experience in Key Activities (cont.)

Bidder's Legal Name: _____

Page _____ of _____ pages

JV Member Legal Name: _____

Subcontractor's Legal Name: _____

	Information
Description of the key activities in accordance with Sub-Factor 4.2b) of Section III:	

Form of Bid Security

Form of Bid Security – Bank Guarantee

[The bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Employer to insert its name and address]*

RFB No.: *[Employer to insert reference number for the Request for Bids]*

Alternative No.: *[Insert identification No if this is a Bid for an alternative]*

Date: *[Insert date of issue]*

BID GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its Bid (hereinafter called "the Bid") for the execution of _____ under RFB No. _____

Furthermore, we understand that, according to the Beneficiary's conditions, Bids must be supported by a Bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Bidder:

- (a) has withdrawn its Bid during the period of Bid validity set forth in the Bidder's Letter of Bid ("the Bid Validity Period"), or any extension thereto provided by the Bidder; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary during the Bid Validity Period or any extension thereto provided by the Applicant, (i) has failed to execute the Contract Agreement, or (ii) has failed to furnish the Performance Security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security issued to the Beneficiary in relation to such contract agreement; or (b) if the Applicant is not the successful Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Bidding process; or (ii) twenty-eight days after the end of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

[Signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

Form of Bid Security- Bid Bond

BOND NO. _____

BY THIS BOND _____ as Principal (hereinafter called “the Principal”), and _____, **authorized to transact business in** _____, as Surety (hereinafter called “the Surety”), are held and firmly bound unto _____ as Obligee (hereinafter called “the Employer”) in the sum of _____⁹(_____), for the payment of which sum, well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has submitted a written Bid to the Employer dated the ____ day of _____, 20__, for the construction of _____ (hereinafter called the “Bid”).

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:

- (a) withdraws its Bid during the period of Bid validity specified in the Form of Bid; or
- (b) having been notified of the acceptance of its Bid by the Employer during the period of Bid validity; (i) fails or refuses to execute the Contract Form, if required; or (ii) fails or refuses to furnish the Performance Security in accordance with the Instructions to Bidders;

then the Surety undertakes to immediately pay to the Employer up to the above amount upon receipt of the Employer’s first written demand, without the Employer having to substantiate its demand, provided that in its demand the Employer shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

The Surety hereby agrees that its obligation will remain in full force and effect up to and including the date 28 days after the date of expiration of the Bid Validity Period set forth in the Principal’s Letter of Bid or any extension thereto provided by the Principal.

IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this ____ day of _____ 20__.

Principal: _____

Surety: _____

Corporate Seal (where appropriate)

(Signature)

(Signature)

(Printed name and title)

(Printed name and title)

⁹ The amount of the Bond shall be denominated in the currency of the *Employer’s Country* or the equivalent amount in a freely convertible currency.

Form of Bid-Securing Declaration

Date: _____

RFB No.: _____

Alternative No.: _____

To: _____

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for Bidding or submitting proposals in any contract with the Employer for the period of time of _____, starting on _____, if we are in breach of our obligation(s) under the Bid conditions, because we:

- (a) have withdrawn our Bid during the period of Bid validity specified in the Letter of Bid; or
- (b) having been notified of the acceptance of our Bid by the Employer during the period of Bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB.

We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Signed: _____

In the capacity of _____

Name: _____

Duly authorized to sign the Bid for and on behalf of: _____

Dated on _____ day of _____, _____

Corporate Seal (where appropriate)

Manufacturer's Authorization

Date: _____

RFB No.: _____

To: _____

WHEREAS

We _____, who are official manufacturers of _____, having factories at _____, do hereby authorize _____ to submit a Bid the purpose of which is to provide the following goods, manufactured by us _____, and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 27 of the General Conditions, with respect to the goods offered by the above firm.

Signed: _____

Name: _____

Title: _____

Duly authorized to sign this Authorization on behalf of:

Dated on _____ day of _____, _____

Section V - Eligible Countries

This Section contains eligible countries as follows;

- I. In accordance with the Loan Agreement, a Bidder, and all parties constituting the Bidder, shall have the nationality of the Republic of Korea.*
- 2. All goods and related services to be supplied under the Contract and financed by the Bank shall have their origin in the countries as follows:*
 - A. Foreign Currency Portion: More than 70%(72.4). All of the foreign currency portion shall be procured from the Republic of Korea.*
 - B. Third Currency Portion : Not Applicable*
 - C. Local Currency Portion: Within USD 7,176,000. All of the local currency portion shall be procured from the Republic of Nicaragua.*

Section VI - Fraud and Corruption

* 본 협약서의 영문 내용은 공식 번역문이 아니며, 불일치가 있는 경우 한글이 우선합니다.

The English text in this declaration is not an official translation. In case of discrepancy, the Korean version shall prevail.

경협기금 지원사업 참여관련 협약서

Declaration of participation in Economic
Development Cooperation Fund (EDCF) financed
projects

한국수출입은행 귀중

To The Export-Import Bank of Korea (the “Bank”)

사업명:

Name of the Project (the “Project”):

당사는 표제의 대외경제협력기금(EDCF)(이하 “기금”이라 한다) 지원사업 참여와
관련하여, 다음 사항을 확인하고 준수할 것을 협약합니다.

We hereby confirm the following with regard to participation in the above-stated Project financed by the
Economic Development Cooperation Fund (EDCF):

- 다 음 -

I. 문제유발행위 제재 관련

I. Declaration on Anti-Corruption and Anti-Malpractice

1. 당사는 「국제상거래에 있어서 외국공무원에 대한 뇌물방지법」의 내용을 충분히 숙지하고 이를 정히 준수하며, 표제 사업과 관련하여 동 법에 규정된 외국공무원 등에 대한 뇌물제공 등 부패행위와 사실왜곡 등 문제유발행위에 관여한 사실이 없으며, 앞으로도 이러한 행위에 관련되지 않겠음.

1. We undertake full understanding and compliance with the Act on Combating Bribery of Foreign Public Officials in International Business Transactions, and declare that neither we nor any other party acting on our behalf with regard to the Project has engaged or will engage in corrupt practices such as bribery and malpractices such as false statement.

2. 당사는 본 협약서 제출일 현재 대한민국의 ‘국가를 당사자로 하는 계약에 관한 법률’에 의거 입찰 참가자격이 제한되는 제재를 받고 있지 않으며, 다자개발은행(MDB)으로부터 부패행위와 사실왜곡 등 문제유발행위로 인하여 제재를 받고 있지 않음.

2. We hereby confirm that our company is not under any sanction in accordance with the Act on Contracts to which the State is a Party of the Republic of Korea, nor is under any sanction imposed by Multilateral Development Banks (MDBs) as a result of engaging in malpractices such as corruption and false statement, as of the date of submission of this Declaration of participation in Economic Development Cooperation Fund (EDCF) financed projects

3. 당사는 컨설턴트 고용계약 또는 구매계약을 신의에 따라 성실하게 이행하며, 정당한 사유 없는 계약 미이행, 대금 부당청구 등의 불성실한 계약 이행을 하지 않을 것임을 확약함.

3. We declare to carry out the consultant contract/procurement contract with utmost good faith, and not to engage in irresponsible misconduct such as nonfulfillment of a contract without proper reasoning or fraudulent claims.

4. 당사는 다음에 해당하는 문제유발행위를 유발한 경우 또는 확약서에 기재된 내용이 거짓으로 판명되는 경우 귀행이 2 년 이내의 기금지원사업 참여 제한 등 조치를 취하더라도 어떠한 이의도 제기하지 않겠음.

가. 계약과 관련된 서류의 위. 변조 또는 허위기재

나. 과실에 의한 하자 또는 보수 발생

다. 부정하도급

라. 조사설계 및 타당성조사용역 부실

마. 계약위반

바. 공중 손해 사고

사. 업무 관계자 사고

아. 뇌물공여

자. 담 합

차. 입찰 및 계약체결 등 방해

카. 부정 또는 불성실한 행위

4. In the event that our company engages in any activity falling under the malpractice category set out below, or be under sanctions imposed by the MDBs, we declare not to raise any objections to the Bank's measures with regard to such activity, including the prohibition of participation in projects financed by EDCF loan for up to two years.

- a. False Statements
- b. Negligent Operations
- c. Improper Subcontracting
- d. Poor Survey and Design Services, Feasibility Studies
- e. Breach of Contract
- f. Damage or Injury to the Public
- g. Damage or Injury to a Person Involved in the Operation
- h. Bribery
- i. Bid Rigging
- j. Interference in Bidding and Contract Conclusion
- k. Wrongful or Dishonest Acts

II. 법적 권리 및 청구권 관련**II . Declaration on Legal Rights and Claims**

1. 당사는 입찰서류 또는 계약서가 당사와 차주(사업실시기관 포함. 이하 같다)의 권리의무관계를 규율하는 바, 당사는 동 입찰서 또는 계약서를 근거로 귀행에 대한 어떠한 법적 권리 또는 청구권을 갖지 않음을 확인함.

1. We acknowledge that the bidding documents and the contract stipulate the rights and obligations of the Supplier and the Borrower(including the Project Executing Agency), and thus we do not have any legal rights nor claims whatsoever against the Bank, which is not a party to the contract, with regard to the bidding documents or the contract.

2. 당사는 차관공여계약서의 당사자는 귀행과 차주이며, 제 3자인 당사는 동 차관계약서를 근거로 귀행을 상대로 어떠한 권리나 청구권도 갖지 않음을 확인함.

2. We also acknowledge that Loan Agreement governs the relationship between the Borrower and the Bank, and that our company, as a third party, do not have any legal rights nor claims whatsoever derived therefrom.

3. 이에 따라, 당사는 당사가 입찰에 탈락하거나 입찰서류 및 계약서의 하자 또는 불이행 등으로 손실을 입는 경우에도 귀행을 상대로 법적 소송을 포함하여 어떠한 형태의 이의도 제기하지 않을 것을 약속함.

3. Therefore, we hereby declare not to raise any objections against the Bank including lawsuits, in the event of tender failure or losses due to defects or nonfulfillment of the contract.

III. 인권 및 환경보호. 건강, 안전 기준 준수 관련

III. Declaration on Human Rights. Environment Protection. Health and Safety

1. 당사는 사업을 수행함에 있어서 적용되는 노동법 및 국제노동기구(ILO)의 핵심노동기준(Core labor standard)을 준수할 것임을 약속함.

1. We undertake to comply with relevant labor laws and the Core Labor Standards of the International Labour Standards(ILO) in the process of contract execution.

2. 당사는 사업을 수행함에 있어서 적용되는 환경보호, 건강 및 안전에 관한 국제 또는 현지국 기준을 준수할 것을 약속함.

2. We undertake to comply with relevant international/local standards with regard to environment protection, health and safety in the process of contract execution.

년 월 일

Year Month Date

회사명 :

Name of Company :

대표자: (인)

Name of Authorized Signatory Signature

PART 2 - Employer's Requirements

Section VII - Employer’s Requirements

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Scope of Supply of Plant and Installation Services by the Contractor

A. Project Overview

I. INTRODUCTION

The current energy policy of the Government of Reconciliation and National Unity (GRUN) is to create the conditions of energy infrastructure to achieve the objectives proposed in the National Human Development Plan (PNDH) 2012-2016 in terms of promoting the socio-economic development of the area to improve the living standards of the inhabitants through rural electrification, taking advantage of the use of renewable energy.

By virtue of the above, this program has been created with the purpose of contributing to the reduction of poverty levels through the implementation of energy generation systems and health based on renewable energy in rural communities in Nicaragua.

It is intended to supply autochthonous electricity, clean, with a self-sustaining management scheme, with energy costs consistent with local reality and with the proper operation of the system, using a source of renewable and natural energy friendly to the environment.

The project will install isolated Photovoltaic Systems (SFV) for the supply of electrical energy since the cost for the construction of electrical networks is high, so that in the design the continuity of the energy supply to the direct or indirect beneficiary populations will be guaranteed through the use of clean technology.

The Project aims to electrify a total of 10,522 systems, including 10,172 houses, 164 schools, 164 community centers, 22 health centers, in 108 rural communities and will contribute 0.55% of the national electricity demand of 635 MW by 2017, according to the National Load Dispatch Center (NLDC) and consequently, it will contribute to the change of the national energy matrix.

The planned investment for the Project "Development of Renewable Energy in Rural Areas" corresponds to a total amount of US \$ 36,469,000.00, broken down into US \$ 33,380,000.00 as a loan from EXIM BANK and counterpart from the Government of Nicaragua for US \$ 3,089,000.00, which will be directed to electrify 108 communities of 09 municipalities of the Autonomous Region of the North Caribbean Coast, Autonomous Region of the South Caribbean Coast and Department of Río San Juan.

II. OBJECTIVES OF THE PROJECT

2.1 General Objective of the Project

Supply electric power through photovoltaic systems in rural communities of Nicaragua and lower energy costs in other types of technologies (lamp, candle, batteries, etc.) in rural areas of Nicaragua, contributing to the improvement of the quality of life of citizens and the environment.

2.2 Specific objectives:

- Provide electricity supply through photovoltaic systems in rural communities of the Autonomous Region of the North Caribbean Coast, Autonomous Region of the South Caribbean Coast and Department of Río San Juan.
- Supply energy total of 10,522 systems, including 10,172 houses, 164 schools, 164 community centers, 22 health centers, in 108 rural communities and will contribute 0.55% of the national electricity demand of 635 MW by 2017, according to the National Load Dispatch Center (NLDC) and consequently, it will contribute to the change of the national energy matrix.
- Improve the standard of living of the population by reducing the expense associated with other sources of energy (potable diesel generator, candle, batteries, etc.) and socio-economic, cultural, educational, health and environmental impact.
- Contribute to the expansion of renewable energy from the generation of photovoltaic solar energy commonly used as an alternative to electrification in the framework of the "National Rural Electrification Plan 2014-2024".

III. BACKGROUND

Electricity distribution and transmission networks are commonly used to supply electricity to populations that are concentrated mainly in the Pacific, North and Central region where the main departments such as Managua (capital of the country), León, Chinandega, Masaya, Carazo, Granada, Rivas, Estelí, Matagalpa, Nueva Segovia, Chontales, etc.

The fact that in these regions even coverage has not increased in recent years is due to the fact that there are topographic barriers for electrification due to the fact that they are mountainous areas and the dwellings are generally dispersed, factors that constitute unfavorable conditions for electrifying electricity networks. This, in turn, indicates a high level of initial investments for the

implementation, in addition a very low demand for electricity is foreseen due to the low population density.

Consequently, the technical-economic feasibility of supplying electricity through the expansion of energy transmission and distribution networks will be very limited. In the long term, the lack of electricity could serve as an obstacle to the economic growth of the project areas, due to a deeper gap between these areas of poverty and the Pacific, North and Central regions of Nicaragua, so there is a need to define alternative solutions through other technologies to guarantee the stable supply of electricity in these rural areas.

The areas of intervention are very favored by nature since it is possible to use the solar brightness necessary to ensure the generation of electricity with photovoltaic solar energy systems (SFV).

The installation of the systems would take advantage of the natural conditions of each place in a natural way, creating the necessary infrastructure to supply the power in the short term and in a very profitable way when compared to the expansion of the transmission and distribution electric networks to be connected these communities to the National Transmission System (NTS).

Therefore, it is an attempt to supply electricity to the project areas by installing autonomous solar photovoltaic / wind and small and mini hydraulic power systems, within the framework of the "National Rural Electrification Plan" (2014 - 2024) ;

In summary, it is anticipated that the execution of this program contains a benefit that the Nicaraguan population has as a right such as the supply of continuous, reliable and safe electric power, in addition to being friendly to the environment and also to the benefit of public organizations such as schools, community centers, health centers, etc., improving the educational environment, health and quality of life by reducing poverty, creating a basis for sustainable development.

IV. JUSTIFICATION

The majority of the communities in the municipalities of the Autonomous Region of the North Caribbean Coast (RACCN), the Autonomous Region of the South Caribbean Coast (RACCS) and the Department of Río San Juan, correspond to areas of severe poverty, currently used as energy resources. : Candles, kerosene for lamps, batteries for flashlights, vehicle batteries, and one or another portable gasoline generator. Translated these elements to equivalent kWh are incurred in very high energy costs compared to the generation with other alternative sources.

By virtue of the above, the populations in these communities incur higher expenses to the detriment of their family economy by making use of limited alternative energy, coupled with low consumption below living standards that do not meet their basic needs.

The project contemplates restoring the right to access electricity through the supply of energy through photovoltaic systems to cover basic needs such as access to information (radio), entertainment and entertainment through the use of a television, excellent lighting and communication with the installation of current sockets for cell phone charging.

The schools will be able to offer for good lighting conditions, audiovisual education with the use of computers and televisions, radio and current sockets for mobile phone recharges, which will allow night activities to be created with the participation of young people and adults, in addition, it will be possible to obtain a better education with greater source of knowledge when making use of a better study technology.

The community centers may offer for a television, radio, good lighting for cultural events, social, meetings, etc.

Health centers may offer a greater schedule of care by having excellent lighting, use of refrigerators for the storage of vaccines and medicines that require refrigeration, which will allow reducing the proliferation of endemic diseases and not, decreasing the infant mortality rate.

Equally, given the growing trend of energy demand, the incentives offered by the state with the opening of the legal framework¹⁰, and the benefits of generating electricity from renewable sources, it is feasible to create generation projects with renewable energy sources renewable energy.

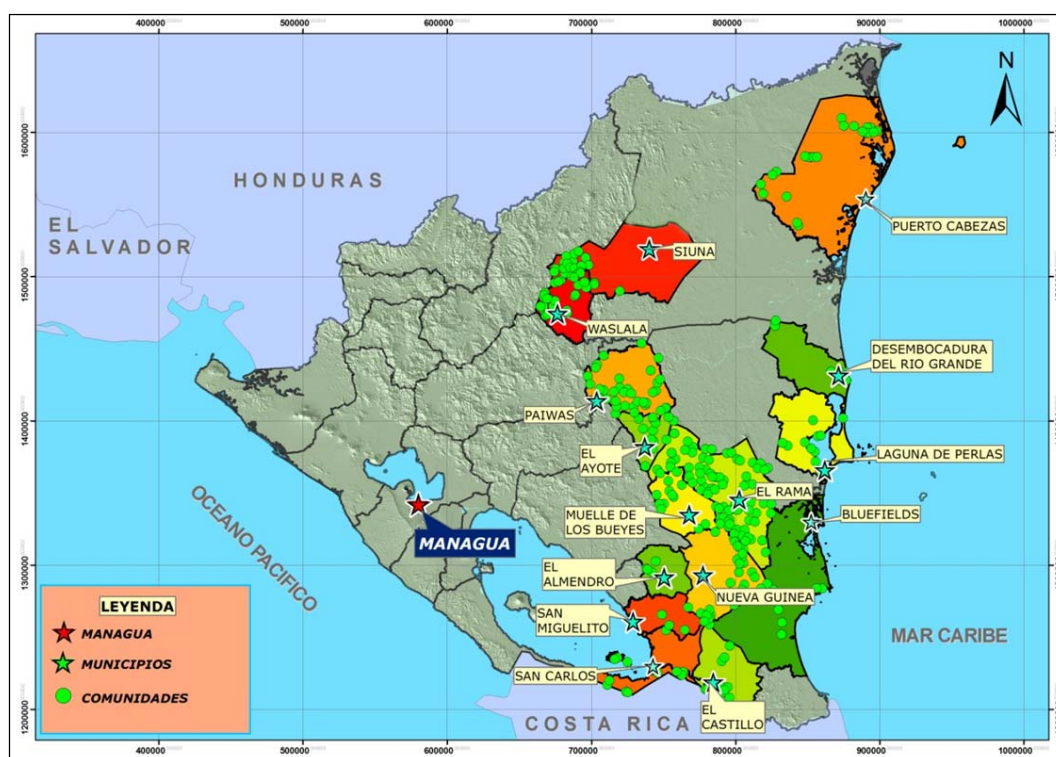
The project is of vital importance for the Integral Development of the Caribbean Coast within the framework of the National Human Development Plan, in order to develop a socio-economic reality that increases the standard of living of its inhabitants.

¹⁰ Ley 901 – reforma a la Ley 532 - Ley para la Promoción de Generación eléctrica con Fuentes Renovables

V. IDENTIFICATION OF THE PROJECT

5.1 Diagnosis of the Area of Influence

The project areas consist of rural communities that administratively belong to 9 municipalities of the Region of the Caribbean Coast Autonomous North (RACCN), the Autonomous Region of the Caribbean Coast South (RACCS) and the Department of Río San Juan:

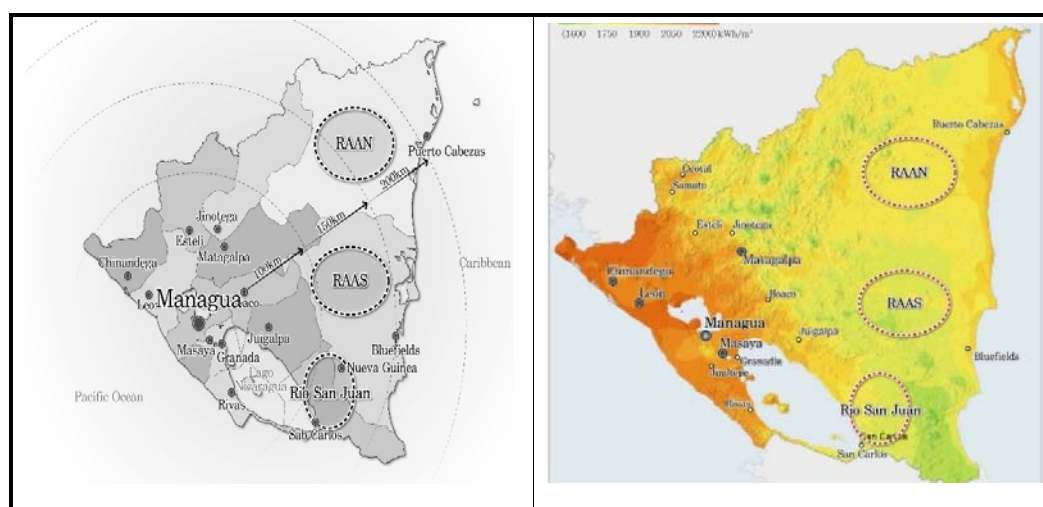


Location Map of the 9 selected municipalities of the Caribbean Coast Region and Department of Río San Juan

Municipalities selected from the Project

Region	Municipalities		
RACCN	Siuna		
RACCS	Laguna de Perlas	Desembocadura del Río Grande	El Ayote
	Nueva Guinea		El Rama
Rio San Juan	San Miguelito	El Castillo	San Carlos

Note: The numbers that appear in parentheses refer to the numbers of communities selected to be covered by the project.



North Caribbean Coast Autonomous Region (RACCN)

La RACCN is an autonomous region located in the northeast of Nicaragua, as shown in the previous figure. The total area of the same is 33,106 km². It borders Nicaragua to the north, the Caribbean Sea to the east, to the south with the RACCS and to the west with the Departments of Jinotega and Matagalpa. The majority of the RACCN has a flat relief, except the Isabelia mountain range on the western border that is 1,600 meters above sea level, and is the highest area of the RACCN.

The Region Caribbean Coast Autonomous North (RACCN), with the Region of the Caribbean Coast South (RACCS), is part with the coast Caribbean that represent set 50.2% the surface national territory. In particular RACCN administratively divide in eight municipalities; Prinzapolka, Bonanza, Rosita, Siuna, Waspán, Waslala, Mulukuku and Puerto Cabezas (Bilwi), what that is the Regional Head.

The population of the RACCN is made up of 382,500 inhabitants, 111,665 in urban areas and 270,835 in rural areas, with a population density of 6.2 inhabitants per km².

Population, income and expenses

The figures in relation to the economically active population in the RACCN are not absolute, since according to the INEC Census (2005), the economically active population (EAP) of the Autonomous Regions is represented by 46.0% of people potentially eligible to work. However, the Government Report, 2007 reflects a range of direct jobs of 10-20% for the entire RACCN. Also some non-governmental organizations (PRESANCA, 2006, FADCANIC, 2007), mention indiscriminately figures that range from 60-80% the level of effective unemployment in the RACCN.

According to an IPADE survey (2005), 30% of the population of the RACCN lives on Agriculture, followed by the service sector with 22.3%, fishing and trade with 12.5 and 11.7% respectively, approximately 70% in the informal sector and they do not have health insurance.

The average general salary of RACCN workers affiliated with social security is US \$ 110.00 a month. FUNICA, 2009.

The expense is a function of the cost of living of the population. The poverty line is below C\$ 400 (US \$ 10.00). Those classified as extreme poverty are those whose per capita income levels do not exceed C\$ 200 monthly córdobas (US \$ 6.70), this indicator being an element that can not be disaggregated by communities in the municipalities. According to the Central Bank of Nicaragua (2008), the cost of the basic food basket ranges from US \$ 175-185 / month nationally for an average family of 6 people. BCN, 2008.

Characterization of the 09 benefited Municipalities and tokens of the 108 communities that will be electrified in the present project.

Municipality of Siuna:

The municipality of Siuna is located in the Autonomous Region of the North Caribbean Coast, 318 km from the department of Managua; its departmental capital is the city of Bilwi.

It is located between 13 ° 44 '00 "of North Latitude and between 84 ° 46' 00" of West Longitude.

To get to the municipality of Siuna, there are two access roads: land and air.

Terrestrial: includes the 318 km of paved road Managua - Puertas Viejas - Siuna

Aerial: through La Costeña Airline, which has regular flights during the week.

In the political-administrative framework, the municipality has an extension of 3,421.58 km² and is composed of 16 neighborhoods and 114 counties or communities.

Agriculture and livestock are the most important socio-economic activities in the area.

The climate of the zone is of humid tropical, registering annual precipitations superiors to the 2000 mm.

The topography is varied, presenting three types of well-defined reliefs: low areas with a height of 0-30 masl and flat terrain with slopes of 0-1% subjected to frequent flooding; intermediate zone with a height of 30-100 masl and undulating terrain with slopes of 0-15% and the mountainous area with a height of 100-600 masl and uneven terrain with slopes of 15-75%.

The soils of the municipality are clayey, silty and loamy clay, with good and moderate drainage. It contains good amount of organic matter, PH slightly acidic to very acidic.

As for the health sector, the municipality has a headquarters building of the Comprehensive Health Care System (SILAIS), 4 health posts sub-headquarters and 43 community health posts. Attention is also given at the volunteer collaborators houses, assisted by health brigades who provide services in Malaria preventive care.

The Ministry of Education reports that in the municipality of Siuna there are:

Preschoolers: 13, with 14 teachers;
Elementary Schools: 85 with 192 teachers;
High Schools: 08 with 37 teachers

A National Technological Institute (INATEC), focused on the agricultural sector that has 443 protagonists.

The municipality also has the presence of two Universities: University of the Autonomous Regions of the Nicaraguan Caribbean Coast (URACCAN) and Martin Luther.

The electric power of the municipality is supplied by the national network, for which adequate and permanent voltages are available. However, this service only reaches the urban area and farmhouses near the road, since there are problems with the access roads to rural communities.

There are domiciliary electrical connections equivalent to 33.10% of the total housing in the municipality, which are purely urban, which reflects that most of the rural areas lack this service.

The Telecommunications service is also low coverage, existing only in the municipal capital and in some communities that receive the signal through booster aeriels.

COMMUNITY NAME		San José de Waslalita	
Municipality			
Department	North Caribbean Coast Autonomous Region		
Municipality	Siuna		
Coordinates	N 13°38.516" and O 85°85.240"		
Distance Km	65 km from Siuna		
ACCESS ROADS			
Land	24 km on paved road from New Guinea plus 2 km on foot to reach the center of the community		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	190	80% wood and zinc, 9% cement, wood and zinc and 1% others	
Schools	2	wood and zinc	
Community center	5	wood and zinc	
ECONOMIC ACTIVITIES			
Cattle raising	Milking used for cheese production, the greater production they sell it at the community El Guayabo and the remaining it is used for family consumption.		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption		
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption		
NATURE			
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm		
Type of soil and relief	Clayey, silty and clay loam, relief with slopes between 15% to 45%		
RISKS OF THE AREA			
Low threat of hurricanes, during the passage of hurricane Mitch in the year 1998, the community suffered severe flooding, later there has been no floods throughout the community, there are no cases of landslides in the entire community area			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come to the municipality of Siuna, the families consume water from artesian wells.			
EDUCATION			
Schools with multigrade modality, attending day shift			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 10 km away from the community			
COMMUNICATIONS			
The county has both operator cellphone receptions (Movistar and Claro)			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 93% of the communal population is able to maintain the contribution of sustainability			

COMMUNITY NAME		La Micaela	
Municipality			
Department	North Caribbean Coast Autonomous Region		
Municipality	Siuna		
Coordinates	N 13°36.827" y O 85°10.004"		
Distance Km	65 km from Siuna		
ACCESS ROADS			
Land	From the bus terminal of Siuna-RACCN, 60 km away, to the community of El Guayabo Macadam road with all-time vehicle access, plus 05km on foot, to reach the community center		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	168	95% wood and zinc, 3% cement, wood and zinc and 2% others	
Schools	2	Cement, wood and zinc	
Community center	4	Cement, wood and zinc	
ECONOMIC ACTIVITIES			
Cattle raising	Milking used for cheese production, the greater production they sell it at the community El Guayabo and the remaining it is used for family consumption.		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption		
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family		
NATURE			
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm		
Type of soil and relief	Clayey, silty and clay loam, relief with slopes between 15% to 45%		
RISKS OF THE AREA			
Low threat of hurricanes, during the passage of hurricane Mitch in the year 1998, the community suffered severe flooding, later there has been no floods throughout the community, there are no cases of landslides in the entire			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come to the municipality of Siuna, the families consume water from artesian wells.			
EDUCATION			
Schools with multigrade modality, attending day shift			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 10 km away from the community			
COMMUNICATIONS			
The county has both operator cellphone receptions (Movistar and Claro)			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 93% of the communal population is able to maintain the contribution of sustainability			

COMMUNITY NAME		Las Barandas	
Municipality			
Department	North Caribbean Coast Autonomous Region		
Municipality	Siuna		
Coordinates	N 13°29.988" and O 85°03.006"		
Distance Km	60 km from Siuna		
ACCESS ROADS			
Land	40 km away from the bus terminal of Siuna-RACCN to the community of El Guayo Resbalón, continuous macadam road and 20 km from the the community of the Guayo Resbalón to Las Barandas, there is only access by vehicle during Dry season, (Summer), on foot or in beast.		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	252	80% wood and zinc, 9% cement, wood and zinc and 1% others	
Schools	4	wood and zinc	
Community center	10	wood and zinc	
ECONOMIC ACTIVITIES			
Cattle raising	Milking used for cheese production, the greater production they sell it at the community El Guayo Resbalón and the remaining it is used for family consumption.		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption		
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption		
NATURE			
Type of Climate	Humid tropical		
Type of soil and relief	Clayey, silty and clay loam, relief with slopes between 15% to 55%		
RISKS OF THE AREA			
Low threat of hurricanes, during the passage of hurricane Mitch in the year 1998, the community suffered severe flooding, later there has been no floods throughout the community, there are no cases of landslides in the entire community area			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come to the municipality of Siuna. The majority of the families consume water from springs, located in the upper parts of the community, the water is transported by gravity using hoses and in smaller quantities they obtain the water from artesian wells.			
EDUCATION			
Schools with multigrade modality, attending day shift			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar illumination system purchased on their own, they also use candles, flashlights and gas lamps. The SIN lines are 15 km away from the community			
COMMUNICATIONS			
The county has Movistar cellphone receptions.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 95% of the communal population is able to maintain the contribution of sustainability			

COMMUNITY NAME		San Isidro	
Municipality			
Department	North Caribbean Coast Autonomous Region		
Municipality	Siuna		
Coordinates	N 13°33.125" y O 85°04.210"		
Distance Km	60 km from Siuna		
ACCESS ROADS			
Land	40 km away from the bus terminal of Siuna-RACCN to the community of El Guayo Resbalón, continous macadam road and 18 km from thecommunity of the Guayo Resbalón to San Isidro, there is only access by vehicle during Dry season, (Summer), on foot or in beast.		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	231	80% wood and zinc, 09% cement, wood and zinc and 1% others	
Schools	3	wood and zinc	
Community center	7	wood and zinc	
ECONOMIC ACTIVITIES			
Cattle raising	Milking used for cheese production, the greater production they sell it at the community El Guayo Resbalón and the remaining it is used for family consumption.		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption		
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption		
NATURE			
Type of Climate	Humid tropical		
Type of soil and relief	Clayey, silty and clay loam, relief with slopes between 15% to 55%		
RISKS OF THE AREA			
Low threat of hurricanes, during the passage of hurricane Mitch in the year 1998, the community suffered severe flooding, later there has been no floods throughout the community, there are no cases of landslides in the entire community area			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come to the municipality of Siuna. The majority of the families consume water from springs, located in the upper parts of the community , the water is transported by gravity using hoses and in smaller quantities they obtain the water from artesian wells.			
EDUCATION			
Schools with multigrade modality, attending day shift			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 13 km away from the community			
COMMUNICATIONS			
The county has Movistar cellphone receptions.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 95% of the communal population is able to maintain the contribution of sustainability			

COMMUNITY NAME		La Rampla
Municipality		
Department	North Caribbean Coast Autonomous Region	
Municipality	Siuna	
Coordinates	N 13°31.741" y O 84°34.002"	
Distance Km	43 km from Siuna	
ACCESS ROADS		
Land	60 km away from the bus terminal of Siuna-RACCN , continous macadam road and 12 km on foot or in beast to reach the center of the community.	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	259	80% wood and zinc, 09% cement, wood and zinc and 1% others
Schools	3	wood and zinc
Community center	10	wood and zinc
ECONOMIC ACTIVITIES		
Cattle raising	Milking used for cheese production, the greater production they sell it at the community of Mongallo and the remaining it is used for family consumption.	
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption	
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption	
NATURE		
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm	
Type of soil and relief	Clayey, silty and clay loam, relief with slopes between 15% to 55%	
RISKS OF THE AREA		
Low threat of hurricanes, during the passage of hurricane Mitch in the year 1998, the community suffered severe flooding, later there has been no floods throughout the community, there are no cases of landslides in the entire community area		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades that come to the municipality of Siuna. The majority of the families consume water from springs, located in the upper parts of the community , the water is transported by gravity using hoses and in smaller quantities they obtain the water from artesian wells.		
EDUCATION		
Schools with multigrade modality, attending day shift		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 13 km away from the community		
COMMUNICATIONS		
The county has Movistar cellphone receptions.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained state that 95% of the communal population is able to maintain the contribution of sustainability		

Region of the Caribbean Coast South (RACCS)

The RACCS is an autonomous region located in eastern Nicaragua, as shown in the previous figure. It borders the Caribbean Sea to the east, to the north with the RACCN, to the west with the departments of Matagalpa, Boaco and Chontales, and to the south with the department of Río San Juan. Most of the RACCS is generally flat, except for the mountains: Las Minitas (510m), La Cusuca (560m), Cacao (571m) in the center of the RACCS and Campana (551m), El Pital (430m) and Tamagas (525m) in the Southern RACCS.

Administratively the RACCS has twelve municipalities of which Bluefields is the seat of the government, the other municipalities are: Kukra Hill, Laguna de Perlas, La Cruz de Río Grande, Desembocadura del Río Grande, El Rama, Muelle de los Bueyes, Nueva Guinea, Paiwas, Corn Island, El Tortuguero and El Ayote.

The RACCS including in the 12 Municipalities has an estimated population of 353,801 inhabitants. (INEC Population Estimates 2009), of which 38% (134,444) live in the urban area and 62% (219,357) in the rural area. It has a territorial extension of 27,260 km, which represents a population density of 14.33 inhabitants per km².(estimate 2016)

According to the municipal extreme poverty map 2005, according to the unsatisfied basic needs method, the Extreme Poverty Index is 63.1% for the RACCS.

This vast plain serves as a drain to several watersheds such as: the basin of the Rio Grande de Matagalpa, the Kurinwas, between Kurinwas and Río Escondido, being the Waswashang River representative of it, the basin of the Escondido River is very important, it should be noted that the Escondido River presents the tributaries of El Siquia, El Mico and El Rama. Other important rivers are Kukra, Punta Gorda and Maíz.

El Rama

Is a municipality of the Autonomous Region of the South Caribbean Coast (RACCS); founded in 1910 and located 292 km from the city of Managua.

The municipality of El Rama is located at the coordinates: 11 ° 43'12 "and 12 ° 44 '00" north latitude and 83 ° 58' 15 "and 85 ° 00'00" west longitude.

The access roads to the municipality of El Rama are terrestrial and aquatic.

Terrestrial: 292 km of paved road must be crossed

Aquatic: can be reached by using public transport that leaves daily at the Bluefield's port.

Within the political-administrative framework, the municipality has a territorial extension of 5,618 km² and is made up of 155 regions or communities.

Agriculture and commerce are the main productive and economic activities of the municipality, although cattle raising in the area is also very important; The most common form of current land use

is known as migratory agriculture, a system of temporary use, in which natural vegetation is cleaned by fire to cultivate for 2 or 3 years, after which it is left at rest for about 5 to 6 years before restarting the cycle.

The main crops are corn, beans and rice, with little yield per hectare. Grasslands occupy between 50 and 60% of the area.

The climate is generally considered monsoon, characterized by registering a rainy period of 9 to 10 months, with average annual rainfall of 2000 to 4000 mm. The rains decrease in the months of March and April. The average annual temperatures range between 25° C and 26° C. Due to its high temperatures and abundant rainfall, it is constantly exposed to storms, tropical depressions, hurricanes and consequent flooding.

The orography of the municipality of El Rama is part of the central mountainous shield (Tertiary Volcanisms) and has as its main figure the Cordillera de Amerrisque that ventures into the municipality through the Serranía de Wapí, located to the north and northeast of the territory, this constitutes a regional watershed of the Escondido and Kurinwás river basins.

This municipality has a very variable relief, from the floodplain to the mountainous. Approximately 42% of the territory, located in the low positions near the mouth of the Mahogany River, has a flat relief on recent alluvial sediments.

In these physiographic positions the soils are subjected to an intense influence of hydromorphism due to deficient drainage, to the high freatic layer, to floods and to puddles.

The Ministry of Health has reports that the municipality of Rama has 1 hospital, 1 Health Center and also 6 Health posts.

The Ministry of Education records that education in the municipality of RAMA is attended in 84 schools in the urban and rural areas, elementary school and high school. There is a university campus in the municipal seat, Bluefields Indian and Caribbean University (BICU), which teaches the courses of Business Administration and Agroforestry Engineering.

The electric power consumed by the municipality of Rama, is supplied by the national network, so that adequate and permanent voltages are available. However, in other municipalities, the service does not reach all the districts in the area since there are problems with the access roads to these communities.

The telecommunications service is considered very good coverage, since both mobile network are available in in most rural areas.

COMMUNITY NAME	El Carmen	
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 11° 56.326' y O 84° 05.179'	
Distance Km	Approximately 37.5 Km from El Rama	
ACCESS ROADS		
Terrestrial	Continuous public transport 25 km to Pavón and mounted 12km	
Water	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	61	wood and zinc, wood and palm
Health Center	-	
Schools	2	wood and zinc
Community Center	2	wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and sale	
Agriculture	Sowing of basic grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate, with constant rain	
Type of soil and relief	Clayey, relief with pronounced elevations in the area	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, storm and tropical depression , there are no cases of landslides caused by heavy rain in the area.		
HEALTH		
The community has one Family Health Post. Water consumption is provided by natural waterholes		
EDUCATION		
The community has 2 elementary multigrade day schools .		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 18 km away.		
COMMUNICATIONS		
Only the high areas could have cell phone signal of either operator.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
A high percentage of the population is able to maintain the contribution of sustainability		

COMMUNITY NAME		El Cas tillo
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12° 03.922' y O 84° 09.217'	
Distance Km	Approximately 32 km from El Rama	
ACCESS ROADS		
Terrestrial	Continuous public transport 25 km to Pavón and mounted 12km	
Water	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	112	wood and zinc, wood and palm
Health Center	1	Concret
Schools	3	2 wood and zinc, 1 Concret and zinc
Community Center	2	wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and sale	
Agriculture	Sowing of basic grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate, with constant rain	
Type of soil and relief	Clayey, relief with pronounced elevations in the area	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, storm and tropical depression , there are no cases of landslides caused by heavy rain in the area.		
HEALTH		
The community has one Family Health Post. Water consumption is provided by natural waterholes		
EDUCATION		
The community has 2 elementary multigrade day schools .		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 15 km away.		
COMMUNICATIONS		
Only the high areas could have cell phone signal of either operator.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
A high percentage of the population is able to maintain the contribution of sustainability		

COMMUNITY NAME		Medina
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12° 06.992´ y O 84° 14.375´	
Distance Km	Approximately 45 km from El Rama	
ACCESS ROADS		
Terrestrial	Mounted for 8 km	
Water	From El Rama dock, take boat for 5 km	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	25	Wood and zinc, wood and palm
Health Center	-	-
Schools	1	Wood and zinc
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and sale	
Agriculture	Sowing of basic grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate, with constant rain	
Type of soil and relief	Clayey, relief with pronounced elevations in the area	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, storm and tropical depression , there are no cases of landslides caused by heavy rain in the area.		
HEALTH		
The community has one Family Health Post. Water consumption is provided by natural waterholes		
EDUCATION		
The community has 3 primary and 1 secondary schools		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 12 km away.		
COMMUNICATIONS		
Only in some areas of the region there is a Movistar telephone signal		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
A high percentage of the population is able to maintain the contribution of sustainability		

COMMUNITY NAME		El Mobile	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 11°58.913´ y O 84°12.737´		
Distance Km	Approximately 36.5 Km from El Rama		
ACCESS ROADS			
Terrestrial			
Water	From El Rama dock, take boat for 36.5 km		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	58	wood and zinc, wood and palm	
Health Center	1	wood and zinc	
Schools	1	wood and zinc	
Community Center	2	wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and sale		
Agriculture	Sowing of basic grains and tubers for family consumption		
Fishing	Artisanal fishing for sale and family consumption		
Tourism	-		
NATURE			
Type of weather	Monsoon climate, with constant rain		
Type of soil and relief	Clayey, relief with pronounced elevations in the area		
RISKS OF THE AREA			
The area is highly exposed to the presence of hurricanes, storm and tropical depression , there are no cases of landslides caused by heavy rain in the area.			
HEALTH			
The community has one Family Health Post. Water consumption is provided by natural waterholes			
EDUCATION			
The community has 1 elementary multigrade day schools .			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 30 km away.			
COMMUNICATIONS			
Only the high areas could have cell phone signal of either operator.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
98.5% of the population is able to maintain the contribution of sustainability			

COMMUNITY NAME		Pueblo Nuevo	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 11° 57.054´ y O 84° 07.328´		
Distance Km	Approximately 50 Km from El Rama		
ACCESS ROADS			
Terrestrial	Continuous public transport 38km to Pavon and mounted 12km		
Water	Start 50 meters to pass the river branch		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	83	wood and zinc, wood and palm	
Health Center	-	-	
Schools	2	wood and zinc	
Community Center	2	wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and sale		
Agriculture	Sowing of basic grains and tubers for family consumption		
Fishing	Artisanal fishing for sale and family consumption		
Commerce	Market day trade of grains, animals, dairy, etc.-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate, with constant rain		
Type of soil and relief	Clayey, generally flat relief		
RISKS OF THE AREA			
Area highly exposed to hurricane, tropical storms and depressions, which is the reason of many muddy areas			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades. Water is consumed from artesian wells			
EDUCATION			
The community has 2 elementary multigrade day schools .			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few homes with solar lighting systems acquired on their own expense, mostly usage of candles, light bulbs and lamps. The SIN network is 12 km away			
COMMUNICATIONS			
Only the high areas could have cell phone signal of either operator.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
A high percentage of the population have agreed to maintain the contribution of sustainability			

COMMUNITY NAME		La Fortuna	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 12° 03.744´ y O 84° 16.274´		
Distance Km	Approximately 50 Km from El Rama		
ACCESS ROADS			
Terrestrial			
Water	From El Rama dock, take commercial boat		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	90	wood and zinc, wood and palm	
Health Center	-	-	
Schools	1	wood and zinc	
Community Center	2	wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and sale		
Agriculture	Sowing of basic grains and tubers for family consumption		
Fishing	Artisanal fishing for sale and family consumption		
Tourism	-		
NATURE			
Type of weather	Monsoon climate, with constant rain		
Type of soil and relief	Clayey, generally flat relief		
RISKS OF THE AREA			
Area highly exposed to the brunt of hurricanes, tropical storms and depressions.			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades. Water is consumed from natural or artesian wells			
EDUCATION			
The community has 1 elementary multigrade day schools .			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
No house has ilumination, mostly they use candles, light bulbs and lamps. The closest SIN network is 25km away.			
COMMUNICATIONS			
In this community, there was no sign of any telephone companies			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
The entire population agrees to contribute with the sustainability quota			

COMMUNITY NAME		Pozol
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 11° 55.231´ and O 84° 11.850´	
Distance Km	Approximately 44 Km from El Rama	
ACCESS ROADS		
Terrestrial	Continuous mounted for 7km until reacing the town	
Water	Depart from the El Rama 36km by boat to Mobile	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	66	wood and zinc, wood and palm, etc
Health Center	-	-
Schools	2	wood and zinc
Community Center	2	wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and sale	
Agriculture	Sowing of basic grains and tubers for family consumption	
Fishing	-	
Commerce	Market Day for the sale of grains and animals ,etc.	
Tourism		
NATURE		
Type of weather	Monsoon climate, with constant rain	
Type of soil and relief	Clayey, generally flat relief with some elevations of up to 100 meters	
RISKS OF THE AREA		
Area highly exposed to the brunt of hurricanes, tropical storms and depressions that cause floods.		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades. Water is consumed from natural or artesian wells		
EDUCATION		
The community has 2 elementary multigrade day schools .		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some houses have small solar panels lighting acquired by themself, they mostly used candles, lights and lamps. The SIN network is 40 km from the region.		
COMMUNICATIONS		
In this community there was no sign of any of the telephone companies, except for specific high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The entire population agrees to contribute with the sustainability quota		

COMMUNITY NAME		La Iguana N°3
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12° 01.945' and O 84° 14.382'	
Distance Km	Approximately 40 Km from El Rama	
ACCESS ROADS		
Terrestrial		
Water	Depart from the El Rama until reaching el caserio	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	48	wood and zinc, wood and palm, etc
Health Center	-	-
Schools	1	wood and zinc
Community Center	-	-
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and sale	
Agriculture	Sowing of basic grains and tubers for family consumption	
Fishing	Artisanal fishing for family consumption	
Tourism		
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with some elevations	
RISKS OF THE AREA		
Area highly exposed to the brunt of hurricanes, tropical storms and depressions that cause floods and river overflow		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades. Water is consumed from natural or artesian and natural wells and in some cases from the river		
EDUCATION		
The community has 1 elementary multigrade day schools .		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some houses have small solar panels lighting acquired by themselves, they mostly used candles, lights and lamps. The SIN network is 40 km from the region.		
COMMUNICATIONS		
In some high areas you could have cellular communication thanks to signal repeating antennas		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The entire population agrees to contribute with the sustainability quota		

COMMUNITY NAME		Loma Linda	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 11° 53.553´ y O 84° 11.015´		
Distance Km	Approximately 45 Km from El Rama		
ACCESS ROADS			
Terrestrial	Continue 11km in beast to reach the hamlet		
Water	Depart from the El Rama 36KM until Mobile		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	73	wood and zinc, wood and palm, etc	
Health Center	-		
Schools	2	wood and zinc	
Community Center	1	wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and sale		
Agriculture	Sowing of basic grains and tubers for family consumption		
Fishing			
Commerce	Sale of grains, animal etc during market day		
Tourism			
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief, with the presence of hills with elevations of up to 200 meters above sea level		
RISKS OF THE AREA			
Area highly exposed to the brunt of hurricanes, tropical storms and depressions.			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades. The water consumption of the inhabitants is mostly artesian wells built by themselves			
EDUCATION			
The community has 2 elementary multigrade day schools .			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some houses have small solar panels lighting acquired by themself, they mostly used candles, lights and lamps. The SIN network is 40 km from the region.			
COMMUNICATIONS			
In some high areas you could have cellular communication thanks to signal repeating antennas			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
The majority of the community agree to contribute with the sustainability quota			

COMMUNITY NAME		San Luis	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 12° 03.591´ and O 84° 06.634´		
Distance Km	Approximately 45 Km from El Rama		
ACCESS ROADS			
Terrestrial	Continuous public transport for 38km to Pavón and mounted 7 km		
Water	Start 50 meters to pass the river branch		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	77	wood and zinc, wood and palm, etc	
Health Center	-		
Schools	2	1 wood and zinc and 1 concret	
Community Center	2	wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Breeding and milking cattle for consumption and trade		
Agriculture	Sowing of basic grains for family consumption		
Fishing			
Commerce	Sale of grains and animals during market day		
Tourism			
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with a lot of mud		
RISKS OF THE AREA			
Area highly exposed to the brunt of hurricanes, tropical storms and depressions that cause water saturation in certain areas			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades. The water consumption comes from natural or artesian wells.			
EDUCATION			
The community has 2 elementary multigrade day schools .			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some houses have small solar panels lighting acquired by themself, they mostly used candles, lights and lamps. The SIN network is 20 km from the region.			
COMMUNICATIONS			
Only in some areas of the region there was a telephone signal from one of the two operators			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
The majority of the community agree to contribute with the sustainability quota			

COMMUNITY NAME		Mataka
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12°18.330' and O 84°17.814'	
Distance Km	Approximately 30 Km from El Rama	
ACCESS ROADS		
Terrestrial	Start in vehicle 10 km to La Esperanza	
Water	Continue by boat 20 km until reaching the region	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	62	wood and zinc, wood and palm, etc
Health Center	-	
Schools	2	wood and zinc
Community Center	1	wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains for family consumption	
Fishing	Artisanal Fishing	
Tourism		
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat land with occasional elevated areas	
RISKS OF THE AREA		
Area highly exposed to the brunt of hurricanes, tropical storms and depressions that cause water saturation in certain areas		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades. The water consumption usually comes from watereyes present in the vicinity of the households		
EDUCATION		
The community has 2 elementary multigrade day schools .		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some houses have small solar panels lighting acquired by themself, they mostly used candles, lights and lamps. The SIN network is 20 km from the region.		
COMMUNICATIONS		
Thanks to the proximity to the city region both telephone operators have signal		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
90% of the comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Matakita
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12° 17.472' and O 84° 19.301'	
Distance Km	Approximately 42 Km from El Rama	
ACCESS ROADS		
Terrestrial	Start in vehicle 10 km to La Esperanza, mounted 12 km	
Water	Continue by boat 20 km until reaching the region Mataka	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	30	wood, zinc, and palm, etc
Health Center	-	
Schools	-	
Community Center	1	wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains for family consumption	
Fishing	Artisanal Fishing	
Tourism		
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat land with occasional elevated areas	
RISKS OF THE AREA		
The area is highly exposed to hurricanes, in the past it has suffered flooding due to hurricane, there are no cases of landslides		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades, the water that is commonly consumed is from watereyes present in the vicinity of the households		
EDUCATION		
The community has no school, the students go to the neighbouring county		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some houses have small solar panels lighting acquired by themselves, they mostly used candles, lights and lamps. The SIN network is 28 km from the region.		
COMMUNICATIONS		
There is only movistar signal In some areas of the county		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
All the comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		San Jerónimo Rio Plata	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 11° 56.724' and O 84° 15.206´		
Distance Km	Approximately 55 Km from El Rama		
ACCESS ROADS			
Terrestrial	-		
Water	From the Rama dock by boat to the hamlet		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	96	wood, zinc, concret and palm, etc	
Health Center	1	concret	
Schools	2	concret, wood and zinc	
Community Center	3	wood and zinc and concret	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and trade		
Agriculture	Sowing of basic grains and tubers for family consumption		
Fishing	Artisanal Fishing for consumption and trade		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, relief fully broken with elevations		
RISKS OF THE AREA			
The area is highly exposed to hurricanes, storms and floods, cases of landslides in low areas due to excessive rainfall			
HEALTH			
The community has one health center, the water consumed is from natural and artesenal			
EDUCATION			
The community has no school, the students go to the neighbouring county wells			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some houses have small solar panels lighting acquired by themself, they mostly used candles, lights and lamps. The SIN network is 50 km from the region.			
COMMUNICATIONS			
There is only movistar signal In some areas of the county			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
All the comunal population agree to contribute with the sustainability quota			

COMMUNITY NAME		El Virgen	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 11° 54.332' and O 84° 08.817'		
Distance Km	Approximately 48 Km from El Rama		
ACCESS ROADS			
Terrestrial	Continue 12 km riding on a beast		
Water	Start with a 36 km boat ride to Mobile		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	154	95% wood and zinc, 3% concret, 2%others	
Health Center	1	concret	
Schools	3	wood and zin and concret	
Community Center	2	wood and zin and concret	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and trade		
Agriculture	Sowing of basic grains and tubers for family consumption		
Fishing	-		
NATURE			
Type of weather	Monsoon climate, with abundant rainfall		
Type of soil and relief	Clayey, generally flat relief with elevations up to 300 meters as the Cerro Negro		
RISKS OF THE AREA			
The area is highly exposed to hurricanes, storms and tropical depression			
HEALTH			
The community has one (1) health center; a sector of the commune has a water purification plant for consumption.			
EDUCATION			
The region has 4 schools 3 with elementary education modality and 1 with highschool modality per encounter			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some houses have small solar panels lighting acquired by themselves, they mostly used candles, lights and lamps. The SIN network is 40 km away from the region.			
COMMUNICATIONS			
In some high areas you could have cellular communication thanks to signal repeating antennas			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
All the comunal population agree to contribute with the sustainability quota			

COMMUNITY NAME		Guadalupe	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 11° 59.217' and O 84° 14.984'		
Distance Km	Approximately 47 Km from El Rama		
ACCESS ROADS			
Terrestrial			
Water	47 km boat ride		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	73	wood, zin, concret, palm, etc.	
Health Center	-		
Schools	2	wood and zin and concret	
Community Center	3	wood and zin and concret	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and trade		
Agriculture	Sowing of basic grains for family consumption		
Fishing	Fishing for family consumption		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations		
RISKS OF THE AREA			
Area highly exposed to hurricane, tropical storms and depressions that has a consequence of mud accumulation			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades, the water that is commonly consumed is from wells built in each dwelling			
EDUCATION			
The region has 2 schools 3 with elementary education modality			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some houses have small solar panels lighting acquired by themself, they mostly used candles, lights and lamps.			
COMMUNICATIONS			
No part of the region could have telephone communication of any kind			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
All the comunal population agree to contribute with the sustainability quota			

COMMUNITY NAME		Murcielago # 1
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 11° 59.939' and O 84° 16.363'	
Distance Km	Approximately 56 Km from El Rama	
ACCESS ROADS		
Terrestrial	Continue on foot or by beast for 16 km	
Water	Start boat ride for 40km to the Iguanas	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	63	wood, zin, palm, etc.
Health Center	-	
Schools	2	wood and zin
Community Center	2	wood and zin
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate, with abundant rainfall	
Type of soil and relief	Clayey, generally flat relief with elevations	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades, the water that is commonly consumed is from wells built by themselves		
EDUCATION		
The region has 2 schools with elementary education modality		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
General lighting conditions such as candles, spotlights and lamps.		
COMMUNICATIONS		
No part of the region could have telephone communication of any kind		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
All the comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Murcielago # 2	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 11° 58.687' and O 84° 17.039'		
Distance Km	Approximately 71 Km from El Rama		
ACCESS ROADS			
Terrestrial	Continue on foot or by beast for 31 km		
Water	Start boat ride for 40 km to the Iguanas		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	37	wood, zin, palm, etc.	
Health Center	-		
Schools	2	wood and zin	
Community Center	1	wood and zin	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and trade		
Agriculture	Sowing of basic grains for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate, with abundant rainfall		
Type of soil and relief	Clayey, generally flat relief with elevations		
RISKS OF THE AREA			
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades, the water that is commonly consumed is from wells built by themself			
EDUCATION			
The region has 2 schools with elementary education modality			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
General lighting conditions such as candles, spotlights and lamps.			
COMMUNICATIONS			
No part of the region could have telephone communication of any kind			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
All the comunal population agree to contribute with the sustainability quota			

COMMUNITY NAME		Kisilala
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12° 14.280´ and O 84° 24.306´	
Distance Km	Approximately 33 Km from El Rama	
ACCESS ROADS		
Terrestrial	Route from Rama 16 Kmand 17 km by road	
Water	Start boat ride for 40 km to the Iguanas	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	266	wood, zin, concret, etc.
Health Center	1	Concret
Schools	-	4 wood and zin, 2 concret
Community Center	-	3 concret, the rest are wood and zin
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate, with abundant rainfall	
Type of soil and relief	Clayey, generally flat relief with few elevations up to 100 meters above sea level	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The water consumption comes from wells build by each household, coming from watereyes and taken by gravity to each house		
EDUCATION		
The region has 4 schools with elementary education modality and 2 with highschool modality by encounters.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN is 15 km away		
COMMUNICATIONS		
The community has a telephone signal from the Movistar operator in almost the entire area		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
98% of the comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Sisi
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12° 05.535' and O 84° 00.634'	
Distance Km	Approximately 20 Km from El Rama	
ACCESS ROADS		
Terrestrial		
Water	Boat ride from Rama Port until reaching the halmet	
Air		
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	52	wood, zin, palm, etc.
Health Center	-	-
Schools	2	wood and zin
Community Center	-	wood and zin
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	Artesanal fishing for personal consumption and trade	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally uneven relief with elevations	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The communit doesnt have a Health Center, but they are atended by medical brigades, the water consumption comes from natural watereyes near by the households		
EDUCATION		
The region has 2 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 12 km away.		
COMMUNICATIONS		
In some high areas of the region there is a mobile phone reception from Movistar		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Magnolia
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12° 05.835' and O 84° 03.501´	
Distance Km	Approximately 10 Km from El Rama	
ACCESS ROADS		
Terrestrial		
Water	Boat ride from Rama Port until reaching the halmet	
Air		
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	78	wood, zinc, palm, etc.
Health Center	1	wood and zinc
Schools	2	wood and zinc concret
Community Center	-	wood and zinc concret
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	Artesanal fishing for personal consumption and trade	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The communit doesnt have a Health Center, but they are atended by medical brigades, the water consumption comes from natural watersprings and wells built by each households		
EDUCATION		
The region has 2 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
No home has electricity only the use of candles, flashlights and lamps. The SIN lines are 6 km away.		
COMMUNICATIONS		
In some high areas of the region there is a mobile phone reception from Movistar		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Minas de Kisilala	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 12° 18.263´ and O 84° 24.850´		
Distance Km	Approximately 43 Km from El Rama		
ACCESS ROADS			
Terrestrial	Start 16 km by highway, 25 km by road and 1.5 mounted		
Water			
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	94	wood, zinc, concret, etc.	
Health Center	1	concret	
Schools	3	wood and zinc	
Community Center	-	wood and zinc and concret	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and trade		
Agriculture	Sowing of basic grains for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate, with abundant rainfall		
Type of soil and relief	Clayey, generally flat relief with elevations up to 100 mts		
RISKS OF THE AREA			
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation			
HEALTH			
The water comsumption comes from wells built by each households			
EDUCATION			
The region has 3 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
No households has electricity, they only use candles, flashlight and lamps. The SIN lines are 26 km away.			
COMMUNICATIONS			
In some high areas of the region there is a mobile phone reception from Movistar			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
The comunal population agree to contribute with the sustainability quota			

COMMUNITY NAME		La Danta	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Rama		
Coordinates	N 12° 39.721' and O 84° 37.299'		
Distance Km	Approximately 235 Km from el Ayote		
ACCESS ROADS			
Terrestrial	30 km road ride from el Ayote		
Water	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	191	wood, zinc, palm, etc.	
Health Center		-	
Schools	4	wood and zinc	
Community Center	3	wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and trade		
Agriculture	Sowing of basic grains and vegetables for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally uneven with hills		
RISKS OF THE AREA			
The area is highly exposed to hurricanes, storms and floods.			
HEALTH			
The community doesn't have a health center, but they are treated in some cases by medical brigades, the water consumption comes from artesian wells built by the community			
EDUCATION			
The region has 3 schools with elementary education modality and 1 with highschool education modality			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few household have solar systems, the majority use candles, flashlight and lamps. The SIN lines are 28 km away.			
COMMUNICATIONS			
Due to the proximity to the local municipality there is cellphone reception from both telecommunication companies			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
The communal population agree to contribute with the sustainability quota			

COMMUNITY NAME		Valentin
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12°30.823' y O 84° 16.746'	
Distance Km	Approximately 50 km from El Rama	
ACCESS ROADS		
Terrestrial	Start 45 km on a highway, 4km by dirt road	
Water	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	153	Wood and zinc, wood and palm
Health Center	1	-
Schools	2	Wood and zinc
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and sale	
Agriculture	Sowing of basic grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate, with constant rain	
Type of soil and relief	Clayey, relief with pronounced elevations in the area	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, storm and tropical depression , there are no cases of landslides caused by heavy rain in the area.		
HEALTH		
The community has one Family Health Post. Water consumption is provided by natural waterholes		
EDUCATION		
The community has 2 elementary multigrade day schools .		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 8 km away.		
COMMUNICATIONS		
Only the high areas could have cell phone signal of either operator.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
A high percentage of the population is able to maintain the contribution of sustainability		

COMMUNITY NAME		Poza Redonda
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Rama	
Coordinates	N 12°30.929' y O 84° 31.609'	
Distance Km	Approximately 42 km from El Rama	
ACCESS ROADS		
Terrestrial	Start 42 km on a highway, 7km by dirt road	
Water	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	147	Wood and zinc, wood and palm
Health Center	1	-
Schools	3	Wood and zinc
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and sale	
Agriculture	Sowing of basic grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate, with constant rain	
Type of soil and relief	Clayey, relief with pronounced elevations in the area	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, storm and tropical depression , there are no cases of landslides caused by heavy rain in the area.		
HEALTH		
The community has one Family Health Post. Water consumption is provided by natural waterholes		
EDUCATION		
The community has 5 elementary multigrade day schools .		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 15 km away.		
COMMUNICATIONS		
Only the high areas could have cell phone signal of either operator.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
A high percentage of the population is able to maintain the contribution of sustainability		

Desembocadura de Río Grande

The municipality of the mouth of Río Grande is located in the department of the Autonomous Region of the South Caribbean Coast (RACCS) and the head is the town of Karawala, which is 452 km from Managua.

Geographically, it is located between 12° 46.90 'and 13° 16.74' north latitude and 83° 30.00 'and 83° 56.85' west longitude.

To reach the population of Karawala from Managua, it is done by the combination of terrestrial and aquatic routes. You'll start by taking the asphalt road to El Rama, then continue on the Macadam road (currently being built of hydraulic concrete) to Laguna de Perlas, on the town dock, you'll board a panga or motorboat with an outboard motor of between 200 and 250 HP power; traveling by water approximately 80 kilometers for 2.5 hours, the last 8 kilometers are navigated on the Karawala River.

As regards its political-administrative framework, the municipality has an area of 1,978 km² and it's composed of 7 regions or communities. The population density is among the lowest in the country equivalent to 2h / km².

Agriculture and fishing are the most important socio-economic activities in the area.

The climate is monsoon *, registering annual rainfall in the range of 3,200 to 4,000 mm.

The topography is characterized by a dominant flat relief until strongly undulated, the soils are of sediment clays consisting of acidic minerals, rich in silica and aluminum and with little reserve of bases; As a consequence, of low fertility.

As for the health sector, the municipality has 1 Health Center and 5 health posts. Assistance is also provided in Casas Bases attended by Brigades.

The Ministry of Education reports that in La Desembocadura de Río Grande exist: 20 public schools, both elementary and high schools (2010).

The municipality's electric service is provided by an isolated network of the national interconnected system that uses diesel plants. The state company ENEL-DOSA is the concessionaire.

The energy supply is not 24 hours a day. According to the MEM, the municipal electric coverage is 83%.

The Telecommunication service is available only in the municipal capital.

COMMUNITY NAME		Company Creek
Municipality		
Department	Desembocadura de Rio Grande (Karawala)	
Municipality	South Caribbean Coast Autonomous Region	
Coordinates	N 13°15.321" and O 83°59.355"	
Distance Km	Approximately 60 km from Karawala municipal capital	
ACCESS ROADS		
Aquatic	58 km from Karawala Port to the Comunity of Company Creek, from there 2 km on foot to the center of the community	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	60	wood and zinc, concret and others
Schools	1	cement and wood (Mini Falda) and Zinc
Health Center	1	cement, wood and zinc
Community center	2	wood and zinc
ECONOMIC ACTIVITIES		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption	
Cattle raising	Milking used for cheese production, the greater production they sell it at municipal capital Karawala, as well as for family consumption.	
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption	
Service	Some families travel to Bluefields for work, those support economically their families (Family Remittances)	
Pig Farming	Its production is low, mostly for sale and in smaller quantities for family consumption	
domestic poultry	Raising chickens for family consumption	
Fishing	Artisanal fishing for family consumption	
NATURE		
Type of Climate	Monsoon type, annual rainfall in the range of 3,200 to 4,000 mm.	
Type of soil and relief	Sedimented clays, consist of acid minerals, rich in silica and aluminum, with little fertility, by the constant rains in the area	
RISKS OF THE AREA		
High threat of hurricanes, there are no cases of landslides in the whole area of the community		
HEALTH		
The community has a health post, the most common attentions are: Diarrhea, repair problems, malaria and malnutrition, the most critical cases are transferred to the community of Karawala or Bluefields, most families consume water from artesian wells.		
EDUCATION		
School center, with multigrade modality, attend day shift		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Fewer houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 90 km away from the community		
COMMUNICATIONS		
There is no cellphone reception from any operator (movistar and claro).		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained state that 90% of the communal population is able to maintain the contribution of sustainability of C\$150.00		

COMMUNITY NAME		Guadalupe
Municipality		
Department	Desembocadura de Río Grande (Karawala) - Río Grande River Mouth (Karawala)	
Municipality	South Caribbean Coast Autonomous Region	
Coordinates	N 13°12.786" and O 83°55.543"	
Distance Km	Approximately 57 Km from Karawala municipal capital	
ACCESS ROADS		
Aquatic	55 km from Karawala Port to the Community of Company Creek, from there 2 km on foot to the center of the community	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	84	wood and zinc, concret and others
Schools	1	cement and wood (Mini Falda) and Zinc
Health Center	1	cement, wood and zinc
Community center	3	wood and zinc
ECONOMIC ACTIVITIES		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption	
Cattle raising	Milking used for cheese production, the greater production they sell it at municipal capital Karawala, as well as for family consumption.	
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption	
Service	Some families travel to Bluefields for work, those support economically their families (Family Remittances)	
Pig Farming	Its production is low, mostly for sale and in smaller quantities for family consumption	
Domestic poultry	Raising chickens for family consumption	
Fishing	Artisanal fishing for family consumption	
NATURE		
Type of Climate	Monsoon type, annual rainfall in the range of 3,200 to 4,000 mm.	
Type of soil and relief	Sedimented clays, consist of acid minerals, rich in silica and aluminum, with little fertility, by the constant rains in the area	
RISKS OF THE AREA		
High threat of hurricanes, there are no cases of landslides in the whole area of the community		
HEALTH		
The community has a health post, the most common attentions are: Diarrhea, repair problems, malaria and malnutrition, the most critical cases are transferred to the community of Karawala or Bluefields, most families consume water from artesian wells.		
EDUCATION		
School center, with multigrade modality, attend day shift		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Fewer houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 80 km away from the community		
COMMUNICATIONS		
There is no cellphone reception from any operator (movistar and claro).		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained state that 90% of the communal population is able to maintain the contribution of sustainability of C\$150.00		

COMMUNITY NAME		LA ESPERANZA	
Municipality			
Department	Desembocadura de Rio Grande (Karawala)		
Municipality	South Caribbean Coast Autonomous Region		
Coordinates	N 13°08.786" and O 83°54.161"		
Distance Km	Approximately 56 km from Karawala municipal capital		
ACCESS ROADS			
Aquatic	54 km from Karawala Port to the Community of La Esperanza, from there 1 km on foot to the center of the community		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	89	wood and zinc, concret and others	
Schools	2	cement and wood (Mini Falda) and Zinc	
Health Center	1	cement, wood and zinc	
Community center	4	wood and zinc	
ECONOMIC ACTIVITIES			
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption		
Cattle raising	Milking used for family consumption.		
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and for family consumption		
Service	Some families travel to Bluefields for work, those support economically their families (Family Remittances)		
Pig Farming	Its production is low, mostly for sale and in smaller quantities for family consumption		
Domestic poultry	Raising chickens for family consumption		
Fishing	Artisanal fishing for family consumption		
NATURE			
Type of Climate	Monsoon type, annual rainfall in the range of 3,200 to 4,000 mm, in this area it rains approximately 8 months of the year from May to December.		
Type of soil and relief	clayey, with sediments, acids, with little fertility, its relief between 5% to 15% of slope, the community is almost flat		
RISKS OF THE AREA			
High threat of hurricanes, there are no cases of landslides in the whole area, but there are cases of flooding in some houses of the community during the rainy season			
HEALTH			
The community has a health post, the most common attentions are: Diarrhea, repair problems, malaria and malnutrition, the most critical cases are transferred to the community of Karawala or Bluefields, most families consume water from artesian wells.			
EDUCATION			
School center, with multigrade modality, attend day shift			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Fewer houses have solar illumination system purchased on their own, they also use candels, flashlights, gas lamps and kerosene. The SIN lines are 70 km away from the community			
COMMUNICATIONS			
There is no cellphone reception from any operator (movistar and claro).			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 90% of the communal population is able to maintain the contribution of sustainability of C\$150.00			

COMMUNITY NAME		BRATHARA	
Municipality			
Department	Desembocadura de Rio Grande (Karawala)		
Municipality	South Caribbean Coast Autonomous Region		
Coordinates	N 13°02.810" and O 83°51.584"		
Distance Km	Approximately 40 km from Karawala municipal capital		
ACCESS ROADS			
Aquatic	40 km boat ride (skiff - panga) from Karawala Port to the Comunity of Brathara		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	47	wood and zinc, others	
Community center	3	wood and zinc	
ECONOMIC ACTIVITIES			
Agriculture	Main economical activity is the sowing of basic grains (beans and corn), for sale and for family consumption		
Cattle raising	Milking used for family consumption.		
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and for family consumption		
Service	Some families travel to Bluefields for work, those support economically their families (Family Remittances)		
Pig Farming	Its production is low, mostly for sale and in smaller quantities for family consumption		
Domestic poultry	Raising chickens for family consumption		
Fishing	Artisanal fishing for family consumption		
NATURE			
Type of Climate	Monsoon type, annual rainfall in the range of 3,200 to 4,000 mm, in this area it rains approximately 8 months of the year from May to December.		
Type of soil and relief	clayey, with sediments, acids, with little fertility, its relief between 05% to 15% of slope, the community is almost flat		
RISKS OF THE AREA			
High threat of hurricanes, there are no cases of landslides in the whole area, but there are cases of flooding in some houses of the community during the rainy season			
HEALTH			
The community does not have a health post, which are visited three times a year by health brigades of the municipal capital Karawala.			
EDUCATION			
The community does not have a school, so these should mobilize the nearest La Espereza community, to attend school courses			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
No household posses a solar ilumination system, they also use candels, flashlights, gas lamps and kerosene. The SIN lines are 65 km away from the community			
COMMUNICATIONS			
There is no cellphone reception from any operator (movistar and claro).			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 90% of the communal population is able to maintain the contribution of sustainability of C\$150.00			

COMMUNITY NAME		LIMHSY	
Municipality			
Department	Desembocadura de Rio Grande (Karawala)		
Municipality	South Caribbean Coast Autonomous Region		
Coordinates	N 12°54.187" and O 83°39.738"		
Distance Km	Approximately 20 km from Karawala municipal capital		
ACCESS ROADS			
Land	20 km boat ride (skiff - panga) from Karawala Port to the Comunity of Limhsy		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	19	wood and zinc, others	
ECONOMIC ACTIVITIES			
Agriculture	Main economical activity is the sowing of basic grains (beans and corn), for sale and for family consumption		
Cattle raising	Milking used for family consumption.		
Musaceae and tubers	Plantain, bananas and cassava for family consumption		
Service	Some families travel to Bluefields for work, those support economically their families (Family Remittances)		
Pig Farming	Its production is low, mostly for sale and in smaller quantities for family		
Domestic poultry	Raising chickens for family consumption		
Fishing	Artisanal fishing for family consumption		
NATURE			
Type of Climate	Monsoon type, annual rainfall in the range of 3,200 to 4,000 mm, in this area it rains approximately 8 months of the year from May to December.		
Type of soil and relief	Clayey, with sediments, acids, with little fertility, its relief between 05% to 15% of slope, the community is almost flat		
RISKS OF THE AREA			
High threat of hurricanes, such as (Juana 1988, Otto 2016) there are no cases of landslides in the whole area, but if there are cases of flooding in some houses of the village during the rainy season			
HEALTH			
The community does not have a health post, which are visited three times a year by health brigades of the municipal capital Karawala.			
EDUCATION			
The community does not have a school, so these should mobilize the nearest La Espereza community, to attend school courses			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
No household posses a solar ilumination system, they also use candels, flashlights, gas lamps and kerosene. The SIN lines are 65 km away from the community			
COMMUNICATIONS			
There is no cellphone reception from any operator (movistar and claro).			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 90% of the communal population is able to maintain the contribution of sustainability of C\$150.00			

COMMUNITY NAME		KIWHA	
Municipality			
Department	Desembocadura de Rio Grande (Karawala)		
Municipality	South Caribbean Coast Autonomous Region		
Coordinates	N 12°54.251" and O 83°40.554"		
Distance Km	Approximately 30 km from Karawala municipal capital		
ACCESS ROADS			
Land	30 km boat ride (skiff - panga) from Karawala Port to the Comunity of Kiwha		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	10	80% wood and zinc, 20% others	
Schools			
ECONOMIC ACTIVITIES			
Agriculture	Main economical activity is the sowing of basic grains (beans and corn), for sale and for family consumption		
Musaceae and tubers	Plantain, bananas and cassava for family consumption		
Service	Some families travel to Bluefields for work, those support economically their families (Family Remittances)		
Pig Farming	Its production is low, mostly for sale and in smaller quantities for family		
Domestic poultry	Raising chickens for family consumption		
Fishing	Artisanal fishing for family consumption		
NATURE			
Type of Climate	Monsoon type, annual rainfall in the range of 3,200 to 4,000 mm, in this area it rains approximately 8 months of the year from May to December.		
Type of soil and relief	Clayey, with sediments, acids, with little fertility, its relief between 05% to 15% of slope, the community is almost flat		
RISKS OF THE AREA			
High threat of hurricanes, such as (Juana 1988, Otto 2016) there are no cases of landslides in the whole area, but if there are cases of flooding in some houses of the village during the rainy season			
HEALTH			
The community does not have a health post, which are visited three times a year by health brigades of the municipal capital Karawala.			
EDUCATION			
The community does not have a school, so these should mobilize the nearest La Espereza community, to attend school courses			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
No household posses a solar ilumination system, they also use candels, flashlights, gas lamps and kerosene. The SIN lines are 65 km away from the community			
COMMUNICATIONS			
There is no cellphone reception from any operator (movistar and claro).			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 90% of the communal population is able to maintain the contribution of sustainability of C\$150.00			

Nueva Guinea

The municipality is located in the Autonomous Region of the South Caribbean Coast, 292 km from the Department of Managua.

Its location between 11 ° 41 '00 "of Latitude North and between 84 ° 27' 00" of West Longitude.

To reach the municipality, there is a land access road, which includes the 292 km of paved road Managua - Empalme de Boaco - Nueva Guinea.

In the political-administrative framework, the municipality has an area of 2,774 km² and it's composed of 9 neighborhoods and 139 counties or communities.

The predominant economic activity in the municipality is the agricultural sector; having a greater impact the agricultural production, subsequently the livestock activity is mainly destined to domestic and national consumption.

The climate of the zone is of humid tropical type, registering annual precipitations in the rank of 2200 mm to 2500 mm.

The topography is varied, presenting three types of well-defined reliefs: flat with height of 100-270 meters above sea level and undulating terrain with slopes of 4-5%; highlands with a height of 100-450 meters above sea level and undulating and steep terrain with slopes of 15-50%, and the mountain ranges with a height of 200-650 meters above sea level and steep slopes with slopes of 50-75%.

The municipality soils are usually deep and shallow, well drained, with clay loamy to clay texture, basic rocks development, with an A horizon that varies between 5 cm and 25 cm, the nutrients are easily washed. In steep reliefs, high rainfall and intensive felling of forests have left soils exposed to water erosion, causing a large number of rocks of basic origin to surface.

As for the health sector, in the municipality is building a headquarters building of the Departmental Hospital for the Autonomous Region of the South Caribbean Coast, in addition to having 1 Municipal Hospital and 38 health centers. Multidisciplinary medical brigades are also presented, which conduct a house-to-house visit in order to prevent health and fight against epidemics. They also provide free medical services in community houses, attending different medical specialties.

The Ministry of Education reports that in the municipality of Nueva Guinea there are:

Preschoolers: 27, with 32 teachers;

Primary Schools: 177 with 345 teachers;

Secondary Schools: 08 with 53 teachers;

A Center for Agricultural Technical Education (CETA / INATEC), focused on the agricultural sector. A Teacher Professionalization Center (Normal School) and Technical Institute for Administration and Economics (ITAE).

The municipality also has the presence of two Universities: Popular University of Nicaragua (UPONIC) and University of the Autonomous Regions of the Nicaraguan Caribbean Coast (URACCAN).

The electric power of the municipality is supplied by the national network, for which adequate and permanent voltages are available. It is important to note that this service reaches mainly the urban area and communities near the road, which represents 74% of electrical coverage, the rest of the rural population does not have the service, mainly due to the distance to the existing network.

The Telecommunications service is good in the urban sectors and close to the main access roads, with low coverage in rural sectors.

COMMUNITY NAME		El Brujo
Municipality		
Department	South Caribbean Coast Autonomous Region - RACCS	
Municipality	Nueva Guinea	
Coordinates	N 11°47.083" y O 84°19.815"	
Distance Km	Approximately 24 km from Nueva Guinea	
ACCESS ROADS		
Land	24 km on paved road from New Guinea plus 2 km on foot to reach the center of the community	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	80	wood and zinc, cement, wood and zinc and others
Schools	-	wood and zinc
Community center	1	wood and zinc
ECONOMIC ACTIVITIES		
Cattle raising	Milking used for cheese production, the greater production they sell it at Colonia Naciones Unidas and the remaining it is used for family	
Agriculture	Sowing of basic grains (beans and corn), for sale and for family	
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption	
NATURE		
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm	
Type of soil and relief	Loamy clayey, relief with slopes between 05% to 45%	
RISKS OF THE AREA		
Low threat of hurricanes, (Juana 1988), which suffered flooding the community, there are no cases of landslides in the whole area of the community		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades that come to La Colonia Naciones Unidas or Nueva Guinea, the families consume water from the springs, located in the upper parts of the community , the water is transported by gravity using hoses and in smaller quantities they obtain the water from artesian wells.		
EDUCATION		
Schools with multigrade modality, attend day shift		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 15 km away from the community		
COMMUNICATIONS		
The county has Movistar cell phone reception, in some high areas there is Claro cellphone reception		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained state that 93% of the communal population is able to maintain the contribution of sustainability		

COMMUNITY NAME		Carlos Delgado	
Municipality			
Department	South Caribbean Coast Autonomous Region - RACCS		
Municipality	Nueva Guinea		
Coordinates	N 11°43.893" y O 84°23.397"		
Distance Km	Approximately 18 km from Nueva Guinea		
ACCESS ROADS			
Land	From New Guinea 13 Km, paved road, plus 5km on foot, to reach the center of the community		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	97	wood and zinc, cement, wood and zinc.	
Schools	2	cement, wood and zinc	
Community center	1	wood and zinc	
ECONOMIC ACTIVITIES			
Cattle raising	Milking used for cheese production, the greater production they sell it at Colonia Naciones Unidas and the remaining it is used for family consumption.		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption		
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption		
NATURE			
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm		
Type of soil and relief	Loamy clayey, relief with slopes between 05% to 50%		
RISKS OF THE AREA			
Low threat of hurricanes, (Juana 1988), which suffered flooding the community, there are no cases of landslides in the whole area of the community			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come to La Colonia Naciones Unidas or Nueva Guinea, the families consume water from the springs, located in the upper parts of the community , the water is transported by gravity using hoses and in smaller quantities they obtain the water from artesian wells.			
EDUCATION			
Both schools with multigrade modality, attend day shift			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 10 km away from the community			
COMMUNICATIONS			
Thanks to the proximity to the municipality, the county has cell phone reception from both operators.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 96% of the communal population is able to maintain the contribution of sustainability			

COMMUNITY NAME		Los Olivos
Municipality		
Department	South Caribbean Coast Autonomous Region - RACCS	
Municipality	Nueva Guinea	
Coordinates	N 11°51.472" y O 84°22.216"	
Distance Km	Approximately 22 km from Nueva Guinea	
ACCESS ROADS		
Land	From New Guinea to El Areno 20 Km paved road and 5 km on foot or in beast, path to reach the community of Los Olivos	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	54	wood and zinc, cement, wood and zinc, others
Schools	2	cement, wood and zinc
Community center	1	wood and zinc
ECONOMIC ACTIVITIES		
Cattle raising	Milking used for cheese production, the greater production they sell it at Copro leche, milk collection center and the remaining it is used for family consumption.	
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption	
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption	
NATURE		
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm	
Type of soil and relief	Loamy clayey, relief with slopes between 15% to 75%	
RISKS OF THE AREA		
Low threat of hurricanes, (Juana 1988), which suffered flooding the community, there are no cases of landslides in the whole area of the community		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades that come to El Areno or Nueva Guinea, the majority of families consume water from springs and in smaller quantity they obtain water from artisanal wells.		
EDUCATION		
School center with multigrade, daytime mode		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 12 km away from the community		
COMMUNICATIONS		
The county has Movistar cell phone reception, in some high areas there is Claro cellphone reception		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained state that 95% of the communal population is able to maintain the contribution of sustainability		

COMMUNITY NAME		El Almacen
Municipality		
Department	South Caribbean Coast Autonomous Region - RACCS	
Municipality	Nueva Guinea	
Coordinates	N 11°37.637" y O 84°27.856"	
Distance Km	Approximately 12 km from Nueva Guinea	
ACCESS ROADS		
Land	10 km on paved road from New Guinea and 2 km on foot or in beast, to reach the center of the Piedra Fina community	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	117	wood and zinc, cement, wood and zinc, others
Schools	3	cement, wood and zinc
Community center	2	wood and zinc
ECONOMIC ACTIVITIES		
Cattle raising	Milking used for cheese production, the greater production they sell it at "Colonia Naciones Unidas" and the remaining it is used for family consumption.	
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption	
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption	
NATURE		
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm	
Type of soil and relief	Loamy clayey, relief with slopes between 10% to 65%	
RISKS OF THE AREA		
Low threat of hurricanes, (Juana 1988), which suffered flooding the community, there are no cases of landslides in the whole area of the community		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades that come from Nueva Guinea, the majority of families consume water from springs and in smaller quantity they obtain water from artisanal wells.		
EDUCATION		
School center with multigrade, daytime mode		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 8 km away from the community		
COMMUNICATIONS		
The county has Movistar cell phone reception, in some high areas there is Claro cellphone reception		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained state that 90% of the communal population is able to maintain the contribution of sustainability		

COMMUNITY NAME		Piedra Fina	
Municipality			
Department	South Caribbean Coast Autonomous Region - RACCS		
Municipality	Nueva Guinea		
Coordinates	N 11°50.182" y O 84°13.360"		
Distance Km	Approximately 43 Km from Nueva Guinea		
ACCESS ROADS			
Land	From New Guinea to Dirianje 33 km paved road, plus 10 km on foot or in beast, to reach the center of the Piedra Fina community		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	208	wood and zinc, cement, wood and zinc, others	
Schools	5	cement, wood and zinc	
Community center	5	wood and zinc	
ECONOMIC ACTIVITIES			
Cattle raising	Milking used for cheese production, the greater production they sell it at Copro Leche, Milk collection center, and the remaining it is used for family consumption.		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption		
Pig Farming	For household consumption		
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption		
NATURE			
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm		
Type of soil and relief	Loamy clayey, relief with slopes between 15% to 75%		
RISKS OF THE AREA			
Low threat of hurricanes, (Juana 1988), which suffered flooding the community, there are no cases of landslides in the whole area of the community			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come from the Nuevo León or Nueva Guinea, the majority of families consume water from springs and in smaller quantity they obtain water from artisanal wells.			
EDUCATION			
Two school with multigrade, daytime modality			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 15 km away from the community			
COMMUNICATIONS			
The county has cell phone reception from both operators.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained state that 93% of the communal population is able to maintain the contribution of sustainability			

COMMUNITY NAME		Los Pérez	
Municipality			
Department	South Caribbean Coast Autonomous Region - RACCS		
Municipality	Nueva Guinea		
Coordinates	N 11°46.678" y O 84°17.273"		
Distance Km	Approximately 28 km from Nueva Guinea		
ACCESS ROADS			
Land			
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	67	wood and zinc, concret, others	
Health Centers			
Schools	2	Concret, wood and zinc	
Community center	1	Wood and zinc	
ECONOMIC ACTIVITIES			
Cattle raising	Milking milk, the largest production is sold to the copro milk collection center, and the smaller part is used for family consumption		
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption		
Musaceae and tubers	Plantain, bananas and mandioca mostly for sale and in smaller quantities for family consumption		
Turism	-		
NATURE			
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm		
Type of soil and relief	Loamy clayey, relief with slopes between 15% to 65%		
RISKS OF THE AREA			
Low threat of hurricanes, (Juana 1988), which suffered flooding the community, there are no cases of landslides in the whole area of the community			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come to El Areno or Nueva Guinea, the majority of families consume water from springs and in smaller quantity they obtain water from artisanal wells.			
EDUCATION			
Two School centers with multigrade, daytime mode			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 8 km away from the community			
COMMUNICATIONS			
The county has cell phone reception from Movistar operator.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 95% of the communal population is able to maintain the contribution of sustainability			

COMMUNITY NAME		Santa Rosa de Providencia
Municipality		
Department	South Caribbean Coast Autonomous Region - RACCS	
Municipality	Nueva Guinea	
Coordinates	N 11°37.256" y O 84°23.451"	
Distance Km	Approximately 22 Km from Nueva Guinea	
ACCESS ROADS		
Land	From New Guinea to Nuevo León 14 Km paved road, from Nuevo León to Cerro Bonito 12 Km, Macadam access road, vehicle access at al times, plus 2 km on foot or in beast, to reach the center of the Piedra Fina community	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	146	wood and zinc, cement, wood and zinc
Schools	3	cement, wood and zinc
Community center	4	wood and zinc
ECONOMIC ACTIVITIES		
Cattle raising	Milking used for cheese production, the greater production they sell it at Copro Leche, Milk collection center, and the remaining it is used for family consumption.	
Agriculture	Sowing of basic grains (beans and corn), for sale and for family consumption	
Pig Farming	For sale, on a smaller scale and larger scale for household consumption	
Musaceae and tubers	Plantain, bananas and cassava mostly for sale and in smaller quantities for family consumption	
NATURE		
Type of Climate	Humid tropical, with annual rainfall 2200 mm to 2500 mm	
Type of soil and relief	Loamy clayey, relief with slopes between 15% to 75%	
RISKS OF THE AREA		
Low threat of hurricanes, (Juana 1988), which suffered flooding the community, there are no cases of landslides in the whole area of the community		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades that come from the Nuevo León or Nueva Guinea.		
EDUCATION		
The school with multigrade, daytime modality		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 10 km away from the community		
COMMUNICATIONS		
The county has Movistar cell phone reception, in some high areas there is Claro cellphone reception		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained state that 95% of the communal population is able to maintain the contribution of sustainability		

El Ayote

Is a municipality of the Autonomous Region of the South Caribbean Coast (RACCS); founded as a municipality in the year 2000 and located 231 km from the department of Managua.

The municipality is located at the follow coordinates: 12 ° 11 '00 "N and 85 ° 17' 00" O.

There is only one access road to reach the municipality of El Ayote, which is by land, with 183.2 km of road and 48.3 km of mechanized road lined with macadam.

In the political-administrative framework, the municipality has an area of 831 km² and is made up of 23 districts or communities.

The main productive and economic activity of the municipality is cattle farming, although pork production is also important; agriculture is practiced on a small scale (basic grains), planted in alluvial soils and with poor productive results.

The climate of the area is considered dry type, being used for the expansion of livestock activity and it records annual rainfall in the range of 2000 to 2450 mm.

The orography of the municipality is formed by natural accidents that are part of the central mountainous shield formed by volcanism, which has as a main figure the Amerrisque mountain range, which reaches an average elevation of 504 meters above sea level.

The soils of the region are divided into undulating land, with slopes of less than 15 ° that have a good natural drainage and are well developed and suitable for agricultural use.

There is another part that includes soils of strongly wavy and steep relief with slopes of 15 ° to 30 °, which adapt only to forests and eventually to pastures.

As for the health sector, the municipality has 1 mother-child healthcare center, in addition to 2 health centers.

The Ministry of Education does not have a delegation in the municipality of EL AYOTE, and its central structures do not have information regarding the municipality education.

It highlights the Catholic Church advocacy, under the jurisdiction of the Vicariate of Bluefields, in the provision of basic health and education services; the institution assumes the organization, training and support of some 40 health brigade members who are the only care personnel in rural communities, and also has under its responsibility some 60 of the 99 rural schools in the municipality, where they estimate that an approximate population of 2,000 student children.

The electric power consumed by the municipality is supplied by the national network, so that adequate and permanent voltages are available. However, this service only reaches the urban area and farmhouses near the road since there are access problems to the rural communities that do not have electricity service.

The telecommunications service has improved considerably in recent years, but is still considered low coverage, existing only in the urban area of the municipality and in some communities that receive the signal through booster aerials

COMMUNITY NAME		Kurinwasito
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°37.727' y O 84°39.156'	
Distance Km	Approximately 29 km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 18 km in vehicle.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	308	wood and zinc, concret and zinc , other
Health Center	-	
Schools	11	Wood, Zinc and Concret
Community Center	-	Wood, Zinc and Concret
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades. The water for human consumption is obtained from the waterhole and from there by gravity pipes reaching the houses.		
EDUCATION		
The community has 10 primary multigrade day schools and 1 secondary school in which the "Distance Secondary in the Field" modality is taught on the weekends.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 15 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

COMMUNITY NAME		LA CHANCHA
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°32.658' and O 84°43.945'	
Distance Km	Approximately 8 Km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 6 km in vehicle, 2 km riding an animal.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	54	wood and zinc, concret and zinc , other
Health Center	-	
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades. The drinking water you get it basically out of artesian wells, using a type of rope pumps.		
EDUCATION		
The community has no school, children attend school in the neighboring community.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 6 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

COMMUNITY NAME		LAJERITO
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°33.819' y O 84°48.214'	
Distance Km	Approximately 24 Km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 20 km in vehicle, 4 km riding an animal.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	64	wood and zinc, concret and zinc, other
Health Center	-	
Schools	2	Wood and Zinc, Concrete and Zinc
Community Center	-	Concret and Zinc
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades. TThe drinking water you get it basically in two ways: artesian wells and collected from waterholes.		
EDUCATION		
The community has 2 elementary multigrade day schools. The modality "High School Distance the Field" is taught in one of the school on weekends.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 21 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

COMMUNITY NAME		EL GUAYABO
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°40.363' and O 84°55.544'	
Distance Km	Approximately 70 Km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 70 km in vehicle.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	69	walls of wood and zinc, concret and zinc, other
Health Center	-	
Schools	2	Wood and Zinc
Community Center	-	Wood and Zinc, Concret and Zinc
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades.		
EDUCATION		
The community has 2 elementary multigrade day schools. On weekends the modality "High School Distance Education in the Field" is taught.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 40 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

COMMUNITY NAME		EL JOBO
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°38.277' y O 84°59.111'	
Distance Km	Approximately 14 Km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 11 km in vehicle, 3 km riding an animal.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	61	wood and zinc, concret and zinc, other
Health Center	-	
Schools	2	concret and zin, Wood and Zinc
Community Center		
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades. Water is obtained in most artesian wells with a rope type pump.		
EDUCATION		
The community has 2 elementary multigrade day schools.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 11 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

COMMUNITY NAME		EL JOBO
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°38.277´ y O 84°59.111´	
Distance Km	Approximately 14 Km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 11 km in vehicle, 3 km riding an animal.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	61	wood and zinc, concret and zinc, other
Health Center	-	
Schools	2	concret and zin, Wood and Zinc
Community Center	1	Concret and Zinc
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades. Water is obtained in most artesian wells with a rope type pump.		
EDUCATION		
The community has 2 elementary multigrade day schools.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 11 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

COMMUNITY NAME		TORTUGA
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°25.638' and O 84°47.666'	
Distance Km	Approximately 8 Km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 8 km in vehicle.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	101	wood and zinc, concret and zinc, other
Health Center	-	
Schools	4	Wood and Zinc, Concret and Zinc
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades.		
EDUCATION		
The community has 3 elementary multigrade day schools and 1 high school, in which the modality "High School Distance the Field" is taught during the weekends.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 6 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

COMMUNITY NAME		TAPALWÁS #1	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Ayote		
Coordinates	N 12°27.554´ and O 84°50.381´		
Distance Km	Approximately 8 km from El Ayote		
ACCESS ROADS			
Terrestrial	From Ayote urban center 2 km in vehicle, 6 km ridign an animal		
Water			
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	32	wood and zinc	
Health Center	-		
Schools	1	wood and zinc	
Community Center	-		
ECONOMIC ACTIVITIES			
Livestock	Sale of live cattle, milking milk for sale and own consumption		
Agriculture	Sowing of grains and tubers for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Tropical Humid Weather		
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.		
RISKS OF THE AREA			
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.			
HEALTH			
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades. The drinking water is acquire from the various waterholes in the territory.			
EDUCATION			
The community has 1 elementary multigrade day schools .			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 6 km away			
COMMUNICATIONS			
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
The communal population agrees and are able to contribute with a sustainability quota.			

COMMUNITY NAME		CERRO AZUL
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°21.905´ and O 84°48.106´	
Distance Km	Approximately 12 Km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 12 km in vehicle.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	80	wood and zinc
Health Center	-	
Schools	2	wood and zinc
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades.		
EDUCATION		
The community has 2 elementary multigrade day schools .		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 9 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

COMMUNITY NAME		SANTA ISABEL	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	El Ayote		
Coordinates	N 12°41.326' and O 84°44.218'		
Distance Km	Approximately 30 Km from El Ayote		
ACCESS ROADS			
Terrestrial	From Ayote urban center 20 km in vehicle, 10 km riding an animal.		
Water			
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	123	wood and zinc, concret and zinc	
Health Center	-		
Schools	2	Wood and Zinc	
Community Center	-	2 Wood and Zinc, 1 Concret and Zinc	
ECONOMIC ACTIVITIES			
Livestock	Sale of live cattle, milking milk for sale and own consumption		
Agriculture	Sowing of grains and tubers for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Tropical Humid Weather		
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.		
RISKS OF THE AREA			
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.			
HEALTH			
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades. The drinking water you get it basically from artesian wells and collected from waterholes.			
EDUCATION			
The community has 2 elementary multigrade day schools.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 7 km away			
COMMUNICATIONS			
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
The communal population agrees and are able to contribute with a sustainability quota.			

COMMUNITY NAME		El Cacao
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	El Ayote	
Coordinates	N 12°36.147' y O 84°53.288'	
Distance Km	Approximately 29 km from El Ayote	
ACCESS ROADS		
Terrestrial	From Ayote urban center 28 km in vehicle, 1 km riding an animal.	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	271	wood and zinc, concret and zinc, other
Health Center	-	
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking milk for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Tropical Humid Weather	
Type of soil and relief	Clayey, black, heavy, wavy, steep and well drained with slopes less than 15% and strongly undulating and steep with slope of 15% to 30%.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community does not have a health post, addressing their medical needs in health posts in neighboring communities, occasionally receiving visits from medical brigades. The water for human consumption is obtained from the waterhole and from there by gravity pipes reaching the houses.		
EDUCATION		
The community has 9 primary multigrade day schools and 1 secondary school in which the "Distance Secondary in the Field" modality is taught on the weekends.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 26 km away		
COMMUNICATIONS		
The community has low cell phone coverage Movistar and Claro, being a bit better in some high points of the territory.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The communal population agrees and are able to contribute with a sustainability quota.		

Laguna de Perlas

The municipality is located in the department of the Autonomous Region of the South Caribbean Coast (RACCS); its departmental capital is the city of Laguna de Perlas, which is 372 km from Managua.

The city has the location of 12 ° 20 '28 "North Latitude and 84 ° 40' 22" West Longitude.

There are two access roads to get to the city of Laguna de Perlas: land and water.

Terrestrial: includes the 292 km of paved road Managua - Rama and the 80 km of the Branch - Pearl Lagoon. This last section is currently constructed of hydraulic concrete.

Aquatic: from Bluefields port using public transport that leaves daily, but without a fixed schedule or itinerary.

In the political-administrative framework, the municipality has an area of 3,876 km² and is composed of 23 districts or communities.

Agriculture, fishing and tourism are the most important socio-economic activities in the area.

The climate is monsoon *, registering annual rainfall in the range of 2000 to 4000 mm.

The topography is characterized by a dominant flat relief until strongly undulated, the areas are sectioned by an abundant network of natural drains, which offer a good surface runoff.

The soils are made of sedimented clays consisting of acidic minerals, rich in silica and aluminum and with little reserve of bases; As a consequence, the soils have low fertility. Between Pearl Lagoon and Bluefields Bay, is the small hill of Kukra Hill (192 m) an isolated mound that stands out in this low and very level area.

As for the health sector, the municipality has 1 type A health center in the city of Laguna de Perlas and another 2 in the districts and 6 health posts. The vast majority of the health infrastructure is located in the lagoon basin, and there is little health coverage for the population that lives along the rivers inside the municipality.

The Ministry of Education reports that in the municipality of Laguna de Perlas there are: 32 schools, both elementary and high school (2010).

The electric power of the municipality is supplied by the national network, for which adequate and permanent voltages are available. However, this service only reaches the urban center and nearby farmhouses. According to data from MEM website, the electric coverage has a percentage of 61%.

The Telecommunications service is also low coverage, existing only in the municipal capital, Orinoco, Pueblo Nuevo, Hallover, Tasbapounie, Marshall Point and Kakabila.

COMMUNITY NAME		Fruta de Pan
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°40.718' y O 83°47.441'	
Distance Km	Approximately 35 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	20	100% wood and zinc.
Health Center	-	-
Schools	1	wood and zinc
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 40 meters	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The community doesn't have a Health Center, but they are attended by medical brigades, the water consumption comes from wells built by each household		
EDUCATION		
The region has 2 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 35 km away.		
COMMUNICATIONS		
In some part of the community there is telephone signal from both operators		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
95% of the communal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Dachinal
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°41.205' y O 83°48.503'	
Distance Km	Approximately 35 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	28	100% wood and zinc.
Health Center	-	-
Schools	1	wood and zinc
Community Center	2	wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 60 meters	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The community doesn't have a Health Center, but they are attended by medical brigades, the water consumption comes from wells built by each household		
EDUCATION		
The region has 1 school with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 35 km away.		
COMMUNICATIONS		
In some part of the community there is telephone signal from both operators		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
95% of the communal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Mano Creek	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°41.925´ y O 83°47.439´		
Distance Km	Approximately 42 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 25 km in the lagoon From Laguna Perlas and 10 km walking		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	44	100% wood and zinc.	
Health Center	-	-	
Schools	1	wood and zinc	
Community Center	2	1wood and zinc; 1 Concret and Zinc	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and trade		
Agriculture	Sowing of basic grains and vegetables for family consumption		
Fishing	Artisanal fishing		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 50 meters		
RISKS OF THE AREA			
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation			
HEALTH			
The communit doesnt have a Health Center, but they are atended by medical brigades, the water consumption comes from wells build by each household			
EDUCATION			
The region has 1 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 42 km away.			
COMMUNICATIONS			
In some part of the community there is telephone signal from both operators			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
98% of the comunal population agree to contribute with the sustainability quota			

COMMUNITY NAME		Chacachaca
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°40.738' y O 83°57.320'	
Distance Km	Approximately 35 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 25 km in the lagoon From Laguna Perlas and 10 km walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	64	95% wood and zinc.
Health Center	-	-
Schools	3	wood and zinc
Community Center	3	1wood and zinc; 1 Concret and Zinc
ECONOMIC ACTIVITIES		
Livestock	Milking cattle for consumption and trade	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	Artisanal fishing	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 40 to 90 meters	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The community does not have a Health Center, but they are atended in El Castaño community Health Center, the water consumption comes from wells build by each household		
EDUCATION		
The region has 1 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 26 km away.		
COMMUNICATIONS		
In some part of the community there is telephone signal from both operators		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
93% of the comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Batata Sector #1	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°38.392' y O 83°41.725'		
Distance Km	Approximately 35 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 25 km in the lagoon From Laguna Perlas and 10 km walking		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	87	97% wood and zinc.	
Health Center	-	-	
Schools	1	wood and zinc	
Community Center	2	1wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Milking cattle for consumption and trade		
Agriculture	Sowing of basic grains and vegetables for family consumption		
Fishing	Artisanal fishing		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 70 meters		
RISKS OF THE AREA			
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation			
HEALTH			
The community does not have a Health Center. The water consumption comes from wells build by each household			
EDUCATION			
The region has 1 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 26 km away.			
COMMUNICATIONS			
In some part of the community there is telephone signal from both operators			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
95% of the comunal population agree to contribute with the sustainability quota			

COMMUNITY NAME		Chiripa
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°37.672' y O 83°41.181'	
Distance Km	Approximately 35 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 60 km in the lagoon From Laguna Perlas and 10 km walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	95	95% wood and zinc.
Health Center	-	-
Schools	3	wood and zinc
Community Center	3	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Elaboration of cheese by hand and breeding of cattle	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 40 to 150 meters	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The community does not have a Health Center, but they are attended in El Castaño community Health Center, the water consumption comes from wells build by each household		
EDUCATION		
The region has 2 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 30 km away.		
COMMUNICATIONS		
In some part of the community there is telephone signal from both operators		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
94% of the comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Sawawás
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°41.842´ y O 83°50.444´	
Distance Km	Approximately 40 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas and 5 km walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	76	95% wood and zinc.
Health Center	-	-
Schools	2	wood and zinc
Community Center	3	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Elaboration of cheese by hand and breeding of cattle	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 50 to 80 meters	
RISKS OF THE AREA		
Area highly exposed to hurricane, tropical storms and tropical depressions, having as a consequence mud accumulation		
HEALTH		
The community does not have a Health Center, but they are attended in El Castaño community Health Center, the water consumption comes from wells build by each household		
EDUCATION		
The region has 1 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 27 km away.		
COMMUNICATIONS		
In some part of the community there is telephone signal from both operators		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
93% of the comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Punta Fusil
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°41.174´ y O 83°42.143´	
Distance Km	Approximately 47 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas and 12 km walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	34	100% wood and zinc.
Health Center	-	-
Schools	1	wood and zinc
Community Center	1	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Elaboration of cheese by hand and breeding of cattle	
Agriculture	Sowing of basic grains and vegetables for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 40 to 100 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
The community does not have a Health Center.		
EDUCATION		
The region has 1 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 37 km away.		
COMMUNICATIONS		
In some part of the community there is telephone signal from both operators		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		El Castaño	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°38.592' y O 83°57.974'		
Distance Km	Approximately 60 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 26 km in the lagoon From Laguna Perlas and 34 km on the Wawashang river.		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	62	100% Concret and zinc.	
Health Center	1	Concret and zinc.	
Schools	1	wood and zinc	
Community Center	3	4 Wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 40 to 100 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
The community does not have a Health Center.			
EDUCATION			
The region has 1 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 35 km away.			
COMMUNICATIONS			
There is no telephone communication, since only in the highest parts of the territory there is a weak cell phone signal			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 96% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		Pihtutingny
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°43.528' y O 83°43.722'	
Distance Km	Approximately 60 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas and 5 km walking.	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	75	100% Wood and zinc.
Health Center	-	
Schools	2	wood and zinc
Community Center	1	
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 40 to 100 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
The community does not have a Health Center.		
EDUCATION		
The region has 1 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 40 km away.		
COMMUNICATIONS		
There is a cell phone signal, from one of the two operating companies in the country, throughout the territory		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		Punta Cañon
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°43.456´ y O 83°41.279´	
Distance Km	Approximately 45 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas and 10 km are traveled by foot or horse	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	110	97% Wood and zinc.
Health Center	-	
Schools	3	Wood and zinc
Community Center	5	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 40 to 80 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
The community does not have a Health Center.		
EDUCATION		
The region has schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 40 km away.		
COMMUNICATIONS		
There is a cell phone signal, from one of the two operating companies in the country, throughout the territory		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 96% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		Cedro # 2
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°40.508' y O 83°52.435'	
Distance Km	Approximately 35 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	31	100% Wood and zinc.
Health Center	-	
Schools	1	Wood and zinc
Community Center	2	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 50 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
The community does not have a Health Center.		
EDUCATION		
The region has 1 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 35 km away.		
COMMUNICATIONS		
There is no telephone communication		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		Zapote
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°39.680´ y O 83°55.426´	
Distance Km	Approximately 35 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 32 km in the lagoon From Laguna Perlas then 5 kilometers on horseback or walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	9	100% Wood and zinc.
Health Center	-	
Schools	1	Wood and zinc
Community Center	1	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 60 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
The community does not have a Health Center.		
EDUCATION		
The region has schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 37 km away.		
COMMUNICATIONS		
There is no telephone communication		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		Maghany
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°39.088´ y O 83°47.723´	
Distance Km	Approximately 37 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas then 15 kilometers on horseback or walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	31	100% Wood and zinc.
Health Center	-	
Schools	1	Wood and zinc
Community Center	1	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 60 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
Water from human consumption is obtained from the eyes of waters or springs		
EDUCATION		
The region has 1 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 37 km away.		
COMMUNICATIONS		
There is a cellular telephone signal throughout the territory, being the signal of the operator Claro, the only one that exists.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		El Papel	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12° 38.492´ y O 84° 01.641´		
Distance Km	Approximately 75 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 60 km in the lagoon From Laguna Perlas then 15 kilometers on horseback or walking		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	190	95% Wood and zinc.	
Health Center	-		
Schools	3	Wood and zinc	
Community Center	4	Wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 40 to 120 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
Water from human consumption is obtained from the eyes of waters or springs			
EDUCATION			
Has 2 primary multigrade schools and one secondary school per meeting on weekends			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 30 km away.			
COMMUNICATIONS			
There is no telephone communication. However, in some geographic points of higher elevation, there is a weak cellular signal.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		Summi Lagoon
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°44.692' y O 83°42.974'	
Distance Km	Approximately 50 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas then 15 kilometers on horseback or walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	125	95% Wood and zinc.
Health Center	-	
Schools	3	Wood and zinc
Community Center	3	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 50 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
Water from human consumption is obtained from the eyes of waters or springs		
EDUCATION		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 50 km away.		
COMMUNICATIONS		
There is no telephone communication.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 93% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		La Quinta	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°38.353´ y O 83°46.537´		
Distance Km	Approximately 43 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas then 8 kilometers on horseback or walking		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	46	100% Wood and zinc.	
Health Center	-		
Schools	1	Wood and zinc	
Community Center	1	Wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 70 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
Water from human consumption is obtained from the eyes of waters or springs			
EDUCATION			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 40 km away.			
COMMUNICATIONS			
There is a telephone signal from Claro			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 96% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		Los Laureles
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°37.354' y O 83°45.238'	
Distance Km	Approximately 48 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas then 13 kilometers on horseback or walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	25	100% Wood and zinc.
Health Center	-	
Schools	1	Wood and zinc
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 70 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
Water from human consumption is obtained from the eyes of waters or springs		
EDUCATION		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 48 km away.		
COMMUNICATIONS		
There is a telephone signal from Claro		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 96% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		Santa Rita	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°34.925´ y O 83°47.243´		
Distance Km	Approximately 48 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas then 13 kilometers on horseback or walking		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	109	98% Wood and zinc.	
Health Center	-		
Schools	2	Wood and zinc	
Community Center	5	Wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 70 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
Water from human consumption is obtained from the eyes of waters or springs			
EDUCATION			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 48 km away.			
COMMUNICATIONS			
There is a telephone signal from Claro			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		La Patriota
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°45.427' y O 83°46.924'	
Distance Km	Approximately 50 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas then 15 kilometers on horseback or walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	177	96% Wood and zinc.
Health Center	-	
Schools	3	Wood and zinc
Community Center	5	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 70 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
Water from human consumption is obtained from the eyes of waters or springs		
EDUCATION		
One of the three schools provides secondary for meetings on Saturdays		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 50 km away.		
COMMUNICATIONS		
There is a telephone signal from Claro		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		Caño Wilson	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°46.623´ y O 83°52.634´		
Distance Km	Approximately 80 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 55 km in the lagoon From Laguna Perlas and 25 km on the Wawashang river.		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	92	100% Wood and zinc.	
Health Center	-		
Schools	2	Wood and zinc	
Community Center	3	Wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 to 70 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
Water from human consumption is obtained from the eyes of waters or springs			
EDUCATION			
One of the three schools provides secondary for meetings on Saturdays			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 40 km away.			
COMMUNICATIONS			
There is a telephone signal from Claro			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		Batata Sector 2	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°40.135´ y O 83°40.325´		
Distance Km	Approximately 80 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 35 km in the lagoon From Laguna Perlas and 12 km on the Wawashang river.		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	52	100% Wood and zinc.	
Health Center	-		
Schools	1	Wood and zinc	
Community Center	1	Wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 50 to 100 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
Water from human consumption is obtained from the eyes of waters or springs			
EDUCATION			
The community has 1 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 47 km away.			
COMMUNICATIONS			
There is a telephone signal from Claro			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		Blue Lagoon	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°33.296´ y O 83°33.296´		
Distance Km	Approximately 55 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial	It advances in vehicle 40 kilometers and then on foot 15 kilometers		
Water			
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	145	97% Wood and zinc.	
Health Center	-		
Schools	4	Wood and zinc	
Community Center	5	Wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 and 50 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
The majority of the population obtains its drinking water from artesian wells equipped with rock-type pumps			
EDUCATION			
The community has 1 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 50 km away.			
COMMUNICATIONS			
There is a telephone signal from Movistar			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		El Fósforo	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°33.943´ y O 83°58.560´		
Distance Km	Approximately 55 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial	It advances in vehicle 40 kilometers and then on foot 15 kilometers		
Water			
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	38	97% Wood and zinc.	
Health Center	-		
Schools	1	Wood and zinc	
Community Center	-		
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 and 50 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
The majority of the population obtains its drinking water from artesian wells equipped with rock-type pumps			
EDUCATION			
The community has 1 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 55 km away.			
COMMUNICATIONS			
There is a telephone signal from Movistar			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		Arenita #2	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°24.741' y O 83°51.402'		
Distance Km	Approximately 57 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial	It advances in vehicle 40 kilometers and then on foot 17 kilometers		
Water			
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	70	100% Wood and zinc.	
Health Center	-		
Schools	2	Wood and zinc	
Community Center	1		
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 and 50 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
The majority of the population obtains its drinking water from artesian wells equipped with rock-type pumps			
EDUCATION			
The community has 1 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 57 km away.			
COMMUNICATIONS			
There is a telephone signal from Movistar			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 95% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

COMMUNITY NAME		Arenita #1
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°22.326' y O 83°49.786'	
Distance Km	Approximately 59 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial	It advances in vehicle 40 kilometers and then on foot 19 kilometers	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	135	97% Wood and zinc.
Health Center	-	
Schools	1	Wood and zinc
Community Center	4	
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 and 50 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
The majority of the population obtains its drinking water from artesian wells equipped with rock-type pumps		
EDUCATION		
The community has 1 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 55 km away.		
COMMUNICATIONS		
There is a telephone signal from Movistar		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 96% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		Arenita #3
LOCATION		
Department	South Caribbean Coast Autonomous Region	
Municipality	Laguna de Perlas	
Coordinates	N 12°25.933´ y O 83°48.760´	
Distance Km	Approximately 24 km from Laguna de Perlas	
ACCESS ROADS		
Terrestrial		
Water	From Laguna Perlas Lagoon by boat / panga sail 20 km in the lagoon From Laguna Perlas then 4 kilometers on horseback or walking	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	115	97% Wood and zinc.
Health Center	-	
Schools	3	Wood and zinc
Community Center	3	Wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Craft cheese making and commercialization of cattle and sheep on foot	
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, generally flat relief with elevations 30 and 50 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes		
HEALTH		
The majority of the population obtains its drinking water from artesian wells equipped with rock-type pumps		
EDUCATION		
The community has 3 schools with elementary education modality.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 24 km away.		
COMMUNICATIONS		
There is a telephone signal from Movistar		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained that 96% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project		

COMMUNITY NAME		Nueva Esperanza	
LOCATION			
Department	South Caribbean Coast Autonomous Region		
Municipality	Laguna de Perlas		
Coordinates	N 12°32.074´ y O 83°49.980´		
Distance Km	Approximately 35 km from Laguna de Perlas		
ACCESS ROADS			
Terrestrial			
Water	From Laguna Perlas Lagoon by boat / panga sail 25 km in the lagoon From Laguna Perlas then 10 kilometers on horseback or walking		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	224	98% Wood and zinc.	
Health Center	-		
Schools	5	Wood and zinc	
Community Center	6	Wood and zinc	
ECONOMIC ACTIVITIES			
Livestock	Craft cheese making and commercialization of cattle and sheep on foot		
Agriculture	Sowing of basic grains and tubers and musaceas for family consumption		
Fishing	-		
Tourism	-		
NATURE			
Type of weather	Monsoon climate		
Type of soil and relief	Clayey, generally flat relief with elevations 30 and 70 meters		
RISKS OF THE AREA			
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides caused by rains caused by hurricanes			
HEALTH			
The majority of the population obtains its drinking water from artesian wells equipped with rock-type pumps			
EDUCATION			
The community has 3 schools with elementary education modality.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Some homes have solar lighting purchased on their own, mostly using candles, flashlight and lamps. The SIN lines are 35 km away.			
COMMUNICATIONS			
There is a telephone signal from Movistar			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained that 96% of the communal population is willing to contribute to sustainability of C \$ 150.00 monthly from the photovoltaic project			

Department of Río San Juan

Río San Juan is located in the South and Southeast of the country, with a territorial extension of 7,540.9 km² that represents 5.8% of the national territory, with a population of 95,596 inhabitants, 1.9% of the country's population. 75.5% of its population is rural. It borders Costa Rica to the south, to the east with the Caribbean coast, and west to Lake Nicaragua. It is a relatively undeveloped region of Nicaragua, and was designated as a nature conservation area by the lake shore of Nicaragua to preserve and care for the ecological environment.

The Department of Río San Juan is divided into six municipalities: San Carlos as departmental head, El Almendro, San Miguelito, El Castillo, Morrito and San Juan de Nicaragua.

The Central Mountain Shield that descends gradually from the north of the country reaches its lowest level in this department. More than continuous mountain ranges, the relief presents a series of low hills and small hills separating the slopes of the rivers that go to the lake from those that go to the Caribbean Sea.

El Castillo

Is located in the department of Río San Juan, 350 km away from the department of Managua; 11 ° 01 '04 "North Latitude and 84 ° 24' 04" West Longitude Coordinates. The head-municipality is located in Boca de Sabalo and is 20 km from the municipality of San Carlos.

The town of El Castillo, had great importance during the Spanish colonization period as a strategic place for the Nicaragua military defense and that later was a mandatory stopover of the transoceanic route between New York and California in the 19th century, during the Golden Fever in the United States.

To get to the city of Boca de Sabalo, there are two access roads: land and water.

Terrestrial: includes the 290 km of paved road Managua - Acoyapa - San Carlos, plus 60km of macadam road.

Aquatic: From the city of San Carlos, it can be transported in barge, the trip can take up to 6 hours or in skiff can take two hours.

Regarding its political-administrative framework, the municipality has a territorial extension of 1,654.8 square kilometers that corresponds to 21.94% of the total area of the department of Río San Juan and is composed of 43 districts or communities.

The main economic activity is agriculture, standing out among the crops of African palm, orange, cocoa, beans and corn, eco-tourism and Sabalo sport fishing is making it a tourist destination to discover.

The climate of the zone is tropical forest, registering annual precipitations in the range of 2,800 to 4,000 mm.

Protected areas, is made up of the Indio-Maíz reserve and a series of private wild reserves that act as buffer zones and protection of nature against the expansion of the agricultural frontier.

The topography is irregular, presenting a series of low hills and small hills, reaching minimum elevations of 33 masl and maximums of 303 masl.

The soils of the area are characterized by being clayey, black, heavy, with drainage problems. As for the health sector, the municipality has 1 Health Center and 1 Health Post. They also have base houses that serve women, with 26 midwives and 17 health brigades.

The medical staff consists of: two doctors, one dentist, six nurses and twenty-three assistants. The causes of consultation for which the population under five years of age attends the health units are: respiratory diseases, parasitism, skin diseases, malaria, diarrhea, in a lower percentage of tuberculosis, the control of pregnancy is attended, control of the growth and development of minors.

The Ministry of Education reports that in the municipality of El Castillo there are:

Preschoolers: 4 schools, with 9 teachers.

Elementary Schools: 10 schools and 32 teachers;

High schools: 1 secondary school and 5 teachers

Culture

The municipality has a historical museum, called El Castillo.

The electric power of the municipality is supplied by the national network, for which adequate and permanent voltages are available. However, this service only reaches the urban area and farmhouses near the road.

The Telecommunications service is a microwave communication system with low coverage, existing only in the municipal capital and in some surrounding communities.

The most abundant fauna in the area are the colorful birds, "pigs" ducks, white herons, howler monkeys, hawks, toucans, swallows and other birds, while green iguanas and turtles sunning on a mound can be seen along its banks. From time to time, the plunge of a frightened lizard (cuajipal).

Hydrographic Basins: It has the following tributaries of the San Juan River: Boca Negra River, Santa Cruz, Sábalo and Poco Sol.

COMMUNITY NAME		La Reforma	
Municipality			
Department	Rio San Juan		
Municipality	El Castillo		
Coordinates	N 11°17.076" and O 84°19.925"		
Distance Km	Approximately 40 km from Boca de Sabalo		
ACCESS ROADS			
Land	35 km from Boca de Sábalo community to Nueva Quezada, Macadam road. From La Nueva Quezada community, 05 km to La Reforma, access road on foot or mounted		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	53	wood, zinc, concret and others	
Health Post	1	wood and zinc	
Schools	-		
Community Center	-		
ECONOMIC ACTIVITIES			
Livestock	Milking for the production of cheese, the largest production they sell it at La Quezada community, and remaining part they use it for family consumption		
Agriculture	Sowing of grains, beens and corn, for trade and family consumption		
Musaceae	Plantain, bananas, for family consumption		
NATURE			
Type of Climate	Tropical Jungle		
Type of soil and relief	Clayey, black, relief with slopes between 05% to 45%		
RISKS OF THE AREA			
Low threat of hurricanes, (Otto 2016), but in the past has suffered flooding by the passage of Hurricane Juana (1988), there are no cases of landslides in the entire area of the community			
HEALTH			
Health Center, Base House, the staff that attends travel from Nueva Quezada on Tuesdays and Thursdays of each week, the most common caseas are in the children, problems of breathing, dearea and malnutrition, other cases are transferred to the closest Health post in Boca de Sabalo			
EDUCATION			
August Cesar Sandino School, with multigrade modality, diurnal			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 5 km away from the community			
COMMUNICATIONS			
The community only has a movistar cell phone signal.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data is obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00			

COMMUNITY NAME		Casa de Tejas
Municipality		
Department	Río San Juan	
Municipality	El Castillo	
Coordinates	N 11°16.383" and O 84°18.037"	
Distance Km	Approximately 40 km from Boca de Sabalo	
ACCESS ROADS		
Land	35 km from Boca de Sábalo community to La Quezada, Macadam road. From La Quezada community, 05 km to La Casa de Teja community, access road on foot or mounted	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	67	wood, zinc, concret and others
Schools	-	
ECONOMIC ACTIVITIES		
Livestock	Milking for the production of cheese, the largest production they sell it at La Quezada community, and remaining part they use it for family consumption	
Agriculture	Sowing of grains, beens and corn, for trade and family consumption	
Musaceae	Plantain, bananas, for family consumption	
NATURE		
Type of Climate	Tropical Jungle	
Type of soil and relief	Clayey, black, relief with slopes between 05% to 45%	
RISKS OF THE AREA		
The area with little threat of hurricanes, such as Hurricane Otto during 2016, after Hurricane Otto, there has been no flooding in the area.		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades that arrive from the community of La Quezada or Boca de Sabalo.		
EDUCATION		
Joaquín Pazos School, with multigrade modality, diurnal		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 7 km away from the community		
COMMUNICATIONS		
The community only has a movistar cell phone signal.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data is obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00		

COMMUNITY NAME		Santa Martha
Municipality		
Department	Río San Juan	
Municipality	El Castillo	
Coordinates	N 11°10.071" and O 84°29.404"	
Distance Km	Approximately 45 km from Boca de Sabalo	
ACCESS ROADS		
Land	43 km on macadam road from Boca de Sabalo until reaching the community and 02 km access road on foot or mounted until reaching the center of the community	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	98	wood, zinc, concret and others
Schools	-	
Community center	-	
ECONOMIC ACTIVITIES		
Cattle raising	Milking for the production of cheese for local trade as well for family consumption.	
Agriculture	Sowing of grains, beens and corn, for trade and family consumption	
Raising pigs	For sale in less quantity and for family consumption	
Domestic poultry	Raising chickens for family consumption	
Musaceae	Plantain, bananas, for family consumption	
NATURE		
Type of Climate	Tropical Jungle	
Type of soil and relief	Clayey, black, relief with slopes between 05% to 45%	
RISKS OF THE AREA		
The area with little threat of hurricanes, such as Hurricane Otto (2016), there are cases of landslides on the high slopes, in areas of agricultural production, which does not affect the homes.		
HEALTH		
The community does not have a health center, but they are assisted in some cases by medical brigades that travel from the community La Esperanza N ° I (San Carlos)		
EDUCATION		
Santa Martha School, preeschool and multigrade modality, diurnal		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 15 km away from the community		
COMMUNICATIONS		
The community only has a movistar cell phone signal.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00		

COMMUNITY NAME		Samaria
Municipality		
Department	Río San Juan	
Municipality	El Castillo	
Coordinates	N 11°05.355" and O 84°16.068"	
Distance Km	Approximately 50 km from Boca de Sabalo	
ACCESS ROADS		
Land	35 km from Boca de Sábalo community to Las Maravillas community, Macadam road. FromLas Maravillas community, 15 km to Samaria community, access road on foot or mounted	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	292	wood, zinc, concret and others
Health Centers	1	wood and zinc
Schools	-	
Community center	-	
ECONOMIC ACTIVITIES		
Cattle raising	Milking for the production of cheese, the highest production they sell at Las Maravillas community on Monday of each week, and the remaining they use for family consumption	
Agriculture	Sowing of grains, beens and corn, for trade and family consumption	
Raising pigs	For sale in less quantity and for family consumption	
Domestic poultry	Raising chickens for family consumption	
Musaceae and tubers	Plantain, bananas and yucca, for family consumption	
NATURE		
Type of Climate	Tropical Jungle	
Type of soil and relief	Clayey, red, irregular relief with elevations 05% to 75% of slopes	
RISKS OF THE AREA		
The area with little threat of hurricanes, such as Hurricane Otto (2016), there are cases of landslides on the high slopes, in areas of agricultural production, which does not affect the homes.		
HEALTH		
The community has a health post, which provides health services, it's attended by a nurse and it's open from Monday to Friday, the most common attentions are: Diarrhea, problems of repair, malaria and malnutrition, the most critical cases are transferred to the community of Las Maravillas after Boca de Sabalo		
EDUCATION		
Miguel Larreynaga School, with Preschool mode. Carlos Fonseca Amador, with primary modality. Thomas Borge School, multigrade. José Coronel Urtecho School, multigrade. Ernesto Che Guevara School, multigrade. All are cared for during the day		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 15 km away from the community		
COMMUNICATIONS		
In some high places of the community you can have cell phone signal of both operators Movistar and Claro.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00		

COMMUNITY NAME		El Diamante	
Municipality			
Department	Río San Juan		
Municipality	El Castillo		
Coordinates	N 11°09.649" and O 84°16.700"		
Distance Km	Approximately 50 Km from Boca de Sabalo		
ACCESS ROADS			
Land	35 km from Boca de Sabalo community to Las Maravillas community,		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	203	wood, zinc, concret and others	
Health Centers	1	wood and zinc	
Schools	-		
Community center	-		
ECONOMIC ACTIVITIES			
Musaceae and tubers	Plantain, bananas and yucca, for family consumption		
NATURE			
Type of Climate	Tropical Jungle		
Type of soil and relief	Clayey, red, irregular relief with elevations 05% to 75% of slopes		
RISKS OF THE AREA			
Low threat of hurricanes, (Otto 2016) affected the entire area of the community, and there are cases of landslides on the high slopes, in areas of agricultural production, which do not affect the homes.			
HEALTH			
The community has a health post, attended by a nurse. Open from Monday to Friday. the most common attentions are: Diarrhea, problems of repair, malaria and malnutrition, the most critical cases are transferred to the community of Las Maravillas tehñ to Boca de Sabalo. In the community most of the families consume water from the springs. Located in the upper parts of the community, the water is			
EDUCATION			
Sacuanjoche preschool school; San Antonio multigrade school; Guardabarranco multigrade school and Santa Teresa School, primary.			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 15 km away from the community			
COMMUNICATIONS			
In some high places of the community you can have cell phone signal of movistar			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00			

COMMUNITY NAME		San Pedro	
Municipality			
Department	Río San Juan		
Municipality	El Castillo		
Coordinates	N 10°14.908" and O 84°23.684"		
Distance Km	Approximately 45 km from Boca de Sabalo		
ACCESS ROADS			
Land	35 km from Boca de Sabalo to El Guácimo, macadam Road. From El Guácimo 10 km to get to San Pablo, the access road is done by foot or mounted.		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	93	wood, zinc, concret and others	
Schools	-		
Community center	-		
ECONOMIC ACTIVITIES			
Cattle raising	Milking for the production of cheese, the highest production lead to sell at El Guácimo community on mondays of each week, and the remaining part is use for family consumption		
Agriculture	Sowing of grains, beens and corn, for trade and family consumption		
Musaceae and tubers	Plantain, bananas and yucca, for family consumption		
NATURE			
Type of Climate	Tropical Jungle		
Type of soil and relief	Clayey, red, irregular relief with elevations 05% to 75% of slopes		
RISKS OF THE AREA			
Low threat of hurricanes, (Otto 2016) affected the entire area of the community, and there are cases of landslides on the high slopes, in areas of agricultural production, which do not affect the homes.			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come from the community of El Guácimo or San Carlos. In the community most of the families consume water from the springs, located in the upper parts of the community, the water is transported by gravity using hoses.			
EDUCATION			
San Jacinto School, with attention to primary-multigrade and. Rafael Chaves pre-school school, both attend daytime			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 15 km away from the community			
COMMUNICATIONS			
In some high places of the community you can have movil reception from both operator movistar and claro.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00			

COMMUNITY NAME		Romeron	
Municipality			
Department	Río San Juan		
Municipality	El Castillo		
Coordinates	N 11°04.939" y O 84°18.106"		
Distance Km	Approximately 50 Km from Boca de Sabalo		
ACCESS ROADS			
Land	35 km from Boca de Sábalo to Las Maravillas , Macadam Road. From las Maravillas 15 km to get to El Romeron, the acess road is done by foot or mounted.		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	77	wood, zinc, concret and others	
Schools	-		
Community center	-		
ECONOMIC ACTIVITIES			
Cattle raising	Milking for the production of cheese, the highest production lead to sell at Las Maravillas community on mondays of each week, and the remaining part is use for family consumption		
Agriculture	Sowing of grains, beens and corn, for trade and family consumption		
Musaceae and tubers	Plantain, bananas and yucca, for family consumption		
NATURE			
Type of Climate	Tropical Jungle		
Type of soil and relief	Clayey, red, irregular relief with elevations 05% to 75% of slopes		
RISKS OF THE AREA			
Low threat of hurricanes, (Otto 2016) affected the entire area of the community, and there are cases of landslides on the high slopes, in areas of agricultural production, which do not affect the homes.			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come from the community of Las Maravillas o de Boca de Sabalo. In the community most of the families consume water from the springs, located in the upper parts of the community, the water is transported by gravity using hoses			
EDUCATION			
Pablo Antonio Cuadra School, with multigrade, daytime modality			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 15 km away from the community			
COMMUNICATIONS			
In some high places of the community you can have movil reception from movistar.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00			

COMMUNITY NAME		Goyo Boca	
Municipality			
Department	Río San Juan		
Municipality	El Castillo		
Coordinates	N 11°16.420" y O 84°27.523"		
Distance Km	Approximately 50 Km from Boca de Sabalo		
ACCESS ROADS			
Land	35 km from Boca de Sábalo to El Guácimo , Macadam Road. From El Guácimo 15 km to get to Goyo Boca, the acess road is done by foot or mounted.		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	93	wood, zinc, concret and others	
Schools	-		
Community center	-		
ECONOMIC ACTIVITIES			
Cattle raising	Milking for the production of cheese, the highest production lead to sell at El Guácimo community on mondays of each week, and the remaining part is use for family consumption		
Agriculture	Sowing of grains, beens and corn, for trade and family consumption		
Musaceae and tubers	Plantain, bananas and yucca, for family consumption		
NATURE			
Type of Climate	Tropical Jungle		
Type of soil and relief	Clayey, red, irregular relief with elevations 05% to 75% of slopes		
RISKS OF THE AREA			
Low threat of hurricanes, (Otto 2016) affected the entire area of the community, and there are cases of landslides on the high slopes, in areas of agricultural production, which do not affect the homes.			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come from the community of El Guácimo o por San Carlos. In the community most of the families consume water from the springs, located in the upper parts of the community, the water is transported by gravity using hoses			
EDUCATION			
Camilo Ortega School, with attention to multigrade. Bello School Preschool dawn. Both attend daytime			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 15 km away from the community			
COMMUNICATIONS			
In some high places of the community you can have movil reception from movistar.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
Data obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00			

COMMUNITY NAME		Bijague
Municipality		
Department	Río San Juan	
Municipality	El Castillo	
Coordinates	N 11°02.530" y O 84°18.872"	
Distance Km	Approximately 55 Km from Boca de Sabalo	
ACCESS ROADS		
Land	35 km from Boca de Sábalo to Las Maravillas , Macadam Road. From Las Maravillas 20 km to get to El Bijague, the acess road is done by foot or mounted.	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	162	wood, zinc, concret and others
Health Center	1	wood and zinc
Schools	-	
Community center	-	
ECONOMIC ACTIVITIES		
Cattle raising	Milking for the production of cheese, the highest production lead to sell at Las Maravillas community on Mondays of each week, and the remaining part is use for family consumption	
Agriculture	Sowing of grains, beans and corn, for trade and family consumption	
Musaceae and tubers	Plantain, bananas and yucca, for family consumption	
NATURE		
Type of Climate	Tropical Jungle	
Type of soil and relief	Clayey, red, irregular relief with elevations 05% to 75% of slopes	
RISKS OF THE AREA		
Low threat of hurricanes, (Otto 2016) affected the entire area of the community, and there are cases of landslides on the high slopes, in areas of agricultural production, which do not affect the homes.		
HEALTH		
The community has a health post, attended by a nurse. Open from Monday to Friday. the most common attentions are: Diarrhea, problems of repair, malaria and malnutrition, the most critical cases are transferred to the community of Las Maravillas tehn to Boca de Sábalo. In the community most of the families consume water from the springs, located in the upper parts of the community, the water is transported by gravity using hoses		
EDUCATION		
Mello School Preschool dawn. Camilo Ortega School of multigrades. both are taken care of during the day shift		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 20 km away from the community		
COMMUNICATIONS		
In some high places of the community you can have movil reception from movistar.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00		

COMMUNITY NAME		Santa Isabel del Pajarito	
Municipality			
Department	Río San Juan		
Municipality	El Castillo		
Coordinates	N 11°20.663" y O 84°22.517"		
Distance Km	Approximately 45 Km from Boca de Sabalo		
ACCESS ROADS			
Land	35 km from Boca de Sábalo to El Guácimo , Macadam Road. From El Guácimo 15 km to get to Santa Isabel del Pajarito , the access road is done by foot or mounted.		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	142	wood, zinc, concret and others	
Schools	-		
Community center	-		
ECONOMIC ACTIVITIES			
Cattle raising	Milking for the production of cheese, the highest production lead to sell at El Guácimo community on mondays of each week, and the remaining part is use for family consumption		
Agriculture	Sowing of grains, beens and corn, for trade and family consumption		
Musaceae and tubers	Plantain, bananas and yucca, for family consumption		
NATURE			
Type of Climate	Tropical Jungle		
Type of soil and relie	Clayey, red, irregular relief with elevations 05% to 75% of slopes		
RISKS OF THE AREA			
Low threat of hurricanes, (Otto 2016) affected the entire area of the community, and there are cases of landslides on the high slopes, in areas of agricultural production, which do not affect the homes.			
HEALTH			
The community does not have a health center, but they are assisted in some cases by medical brigades that come from the community of El Guácimo o por San Carlos. In the community most of the families consume water from the springs, located in the upper parts of the community, the water is transported by gravity using hoses			
EDUCATION			
Santa Isabel School with attention to multigrade. Papayal school preschool. El Cangrejal school center, multigrade. All are cared for during the day shift			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar ilumination system purchased on their own, they also use candel, flashlights and gas lamps. The SIN lines are 30 km away from the community			
COMMUNICATIONS			
In some high places of the community you can have movil reception from movistar.			
EPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABI			
Data obtained from 95% of the population that are able to maintain the sustainability contribution equivalent to C\$ 150.00			

San Carlos

Is located in the department of Rio San Juan, 290 km away from Managua, its departmental capital is the city with the same name.

It is located between 11 ° 24 '40 "and 11 ° 00' 20" North Latitude, and between 84 ° 24 '40 "- 85 ° 11' West Longitude.

To get to the city of San Carlos, there are three access routes: land, air and water:

Terrestrial: includes the 290 km of paved road Managua - Acoyapa - San Carlos.

Aerial: through La Costeña Airline, which has regular flights during the week.

Aquatic: using public transport that leaves on Mondays and Thursdays in Granada at 3 o'clock in the afternoon.

In the political-administrative framework, the municipality covers an area of 1,462 km² and is composed of 71 regions or communities that include the Solentiname archipelago.

Agriculture, livestock, fishing and tourism are the most important socio-economic activities in the area.

The climate of the zone is of humid tropical type, registering annual precipitations in the rank of 2000 to 3000 mm.

The topography is irregular, presenting a series of low hills and small hills, reaching minimum elevations of 50 m.a.s.l. and maximums of 300 m.a.s.l.

The soils of the area are characterized by being clayey, black, heavy, and with drainage problems.

Regarding the health sector, the municipality has 1 hospital in the city of San Carlos and has 1 health center and 17 health posts. Attention is also given to Casas Bases of volunteer collaborators, assisted by Brigades who provide services in Malaria preventive care.

The Ministry of Education reports that in the municipality of San Carlos there are:

Preschoolers: 128, with 64 teachers;

Elementary Schools: 86, with 126 classrooms and 207 teachers;

High Schools: 10, with 50 classrooms and 42 teachers and

A center: with 22 teachers for adult education.

The municipality also has the presence of the Popular University of Nicaragua (UPONIC), which offers Engineering Careers in Agricultural Sciences, Technical Education for Teachers, Law and Accounting.

The electric power of the municipality is supplied by the national network, for which adequate and permanent voltages are available. However, this service only reaches the urban area and hamlets near the road.

There are 2,566 installed domiciliary connections equivalent to 38.20% of the total housing in the municipality, which reflects that most of the rural areas lack this service.

The Telecommunications service has a low coverage as well, existing only in the municipal seat, La Azucena and Los Chiles.

COMMUNITY NAME		Pueblo Nuevo #1
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°01.345' and O 85°05.000'	
Distance Km	Approximately 47 Km from San Carlos	
ACCESS ROADS		
Terrestrial	12 km car ride from Papaturro community to Pueblo Nuevo #1 community	
Water	35 km from San Carlos port by boat til Papaturro community.	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	56	wood, concret, zinc and others
Health Center	-	
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	-	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community doesnt have a health post, attending their medical needs in the health post of the neighboring community of Papaturro, occasionally receiving visits from medical brigades.		
EDUCATION		
The community has 1 schools with elementary multigraded day education		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 47 km away.		
COMMUNICATIONS		
The community has cellular telephone coverage of Movistar, Claro and Kolbi (Costa Rica), thanks to its proximity to the antennas located in the Republic of Costa Rica.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Pueblo Nuevo #2
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°01.976' and O 85°04.582'	
Distance Km	Approximately 42 Km from San Carlos	
ACCESS ROADS		
Terrestrial	7 km car ride from Papaturro community to Pueblo Nuevo #2 community	
Water	35 km from San Carlos port by boat til Papaturro community.	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	60	wood, zinc, concret and others
Health Center	1	wood and zinc
Schools	-	wood and zinc
Community Center	-	wood, concret and zinc
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	-	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health post, which is used during the visits of medical brigades.		
EDUCATION		
The community has 1 schools with elementary multigraded day education		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 42 km away.		
COMMUNICATIONS		
The community has cellular telephone coverage of Movistar, Claro and Kolbi (Costa Rica), thanks to its proximity to the antennas located in the Republic of Costa Rica.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Solentiname (Are no No.2)
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°12.222' and O 85°02.411'	
Distance Km	Approximately 25 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	25 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	12	wood, concret, zinc and other
Health Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecoturism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring areas, it is also used during visits of medical teams.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 25 km away.		
COMMUNICATIONS		
The community has regular cellular telephone coverage of Movistar and Claro due its proximity to the San Carlos municipality.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Solentiname (Sector Mancarroncito)
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°10.514' and O 85°04.000'	
Distance Km	Approximately 25 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	25 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	22	wood, concret, zinc and other
Health Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecotourism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring areas, it is also used during visits of medical teams.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 25 km away.		
COMMUNICATIONS		
The community has regular cellular telephone coverage of Movistar and Claro due its proximity to the San Carlos municipality.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Solentiname (Sector: Venado No.1)
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°00.754' and O 84°57.629'	
Distance Km	Approximately 25 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	25 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	57	wood, concret, zinc and other
Health Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecoturism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring areas, it is also used during visits of medical teams.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 25 km away.		
COMMUNICATIONS		
The community has regular cellular telephone coverage of Movistar and Claro due its proximity to the San Carlos municipality.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Solentiname (Sector: Mancarrón)
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°10.447' and O 85°00.091'	
Distance Km	Approximately 25 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	25 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	49	wood, concret, zinc and other
Health Center	1	wood and zinc
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecotourism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring areas, it is also used during visits of medical teams.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 25 km away.		
COMMUNICATIONS		
The community has regular cellular telephone coverage of Movistar and Claro due its proximity to the San Carlos municipality.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Solentiname (Sector: Ortega)
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°12.123' and O 85°01.518'	
Distance Km	Approximately 25 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	25 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	19	wood, concret, zinc and other
Health Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecoturism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring areas, it is also used during visits of medical teams.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 25 km away.		
COMMUNICATIONS		
The community has regular cellular telephone coverage of Movistar and Claro due its proximity to the San Carlos municipality.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Solentiname (Sector: Colectivo)
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°11.112' and O 85°00.694'	
Distance Km	Approximately 25 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	25 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	38	wood, concret, zinc and other
Health Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecotourism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring areas, it is also used during visits of medical teams.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 25 km away.		
COMMUNICATIONS		
The community has regular cellular telephone coverage of Movistar and Claro due its proximity to the San Carlos municipality.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Solentiname (San Fernando)
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°10.064' and O 84°58.558'	
Distance Km	Approximately 25 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	25 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	58	wood, concret, zinc and other
Health Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecoturism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring areas, it is also used during visits of medical teams.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 25 km away.		
COMMUNICATIONS		
The community has regular cellular telephone coverage of Movistar and Claro due its proximity to the San Carlos municipality.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Solentiname (Venada No.2)
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°08.551' and O 84°55.785'	
Distance Km	Approximately 25 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	25 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	28	wood, concret, zinc and other
Health Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecotourism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring areas, it is also used during visits of medical teams.		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 25 km away.		
COMMUNICATIONS		
The community has regular cellular telephone coverage of Movistar and Claro due its proximity to the San Carlos municipality.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Papaturro
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°01.823' and O 85°03.340'	
Distance Km	Approximately 35 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	45 km from San Carlos port by boat	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	55	wood, concret, zinc and others
Health Center	1	Concret and zinc
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	Ecoturism	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to hurricanes, storms and tropical depression, in the past it had flooding due to hurricane, there are no cases of landslides.		
HEALTH		
The community has a health center serving residents of the community and neighboring communities, it is also used during visits of medical brigades.		
EDUCATION		
The community has 1 schools with elementary multigraded day education		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 35 km away.		
COMMUNICATIONS		
The community has cellular telephone coverage of Movistar, Claro and Kolbi (Costa Rica), thanks to its proximity to the antennas located in the Republic of Costa Rica.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Santa Elena	
LOCATION			
Department	Río San Juan		
Municipality	San Carlos		
Coordinates	N 11°01.773' and O 85°00.409'		
Distance Km	Approximately 50 Km from San Carlos		
ACCESS ROADS			
Terrestrial	15 KM on a car ride from Papaturro community to Santa Elena community		
Water	35 km from San Carlos port by boat til Papaturro community.		
Air	-		
COMMUNITY INFRASTRUCTURE			
	Quantity	TYPE OF CONSTRUCTION	
Housing	195	wood, concret, zinc and others	
Health Center	1	wood and zinc	
Schools	-		
Community Center	-		
ECONOMIC ACTIVITIES			
Livestock	Sale of live cattle, milking for sale and own consumption		
Agriculture	Sowing of grains and tubers for family consumption		
Fishing	artisanal fishing		
Tourism	-		
NATURE			
Type of weather	Tropical Humid		
Type of soil and relief	Clayey, black, heavy, with drainage problems.		
RISKS OF THE AREA			
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides. During the winter between the months of August and November, some houses suffer flooding due to the increase in water level of the lake.			
HEALTH			
The community has a health centerwhich is used during visits of medical brigades.			
EDUCATION			
The community has 1 schools with elementary multigraded day education			
ELECTRIC POWER - OTHER MEANS OF LIGHTING			
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 50 km away.			
COMMUNICATIONS			
The community has cellular telephone coverage of Movistar, Claro and Kolbi (Costa Rica), thanks to its proximity to the antennas located in the Republic of Costa Rica.			
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY			
The comunal population agree to contribute with the sustainability quota			

COMMUNITY NAME		Jomusa
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°02.161' y O 85°08.633'	
Distance Km	Approximately 22 Km from San Carlos	
ACCESS ROADS		
Terrestrial		
Water	45 km from San Carlos port	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	103	wood, concret, zinc and others
Health Center	1	Concret and zinc
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to hurricanes, storms and tropical depression, in the past it had flooding due to hurricane, there are no cases of landslides.		
HEALTH		
The community has a health post, which is used during medical brigades visits.		
EDUCATION		
The community has 2 schools with elementary multigraded day education		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 45 km away.		
COMMUNICATIONS		
The community has cellular telephone coverage of Movistar, Claro and Kolbi (Costa Rica), thanks to its proximity to the antennas located in the Republic of Costa Rica.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		El Coral
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 10°59.914' and O 85°00.916'	
Distance Km	Approximately 55 Km from San Carlos	
ACCESS ROADS		
Terrestrial	20 km car ride from Papaturro community to El Coral community	
Water	35 km from San Carlos port by boat til Papaturro community.	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	59	wood, concret, zinc and others
Health Center	-	
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	-	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community doesnt have a health post, attending their medical needs in the health post of the neighboring community of Papaturro, occasionally receiving visits from medical brigades.		
EDUCATION		
The community has 1 schools with elementary multigraded day education		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar illumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 55 km away.		
COMMUNICATIONS		
The community has cellular telephone coverage of Movistar, Claro and Kolbi (Costa Rica), thanks to its proximity to the antennas located in the Republic of Costa Rica.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

COMMUNITY NAME		Valle Guadalupe
LOCATION		
Department	Río San Juan	
Municipality	San Carlos	
Coordinates	N 11°00.117' and O 85°03.203'	
Distance Km	Approximately 45 Km from San Carlos	
ACCESS ROADS		
Terrestrial	10 km on a car ride from Papaturro community to Valle Guadalupe community	
Water	35 km from San Carlos port by boat til Papaturro community.	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	95	wood, concret, zinc and others
Health Center	-	
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Sale of live cattle, milking for sale and own consumption	
Agriculture	Sowing of grains and tubers for family consumption	
Fishing	artisanal fishing	
Tourism	-	
NATURE		
Type of weather	Tropical Humid	
Type of soil and relief	Clayey, black, heavy, with drainage problems.	
RISKS OF THE AREA		
The area is highly exposed to the presence of hurricanes, in the past it has suffered flooding due to hurricanes, there are no cases of landslides.		
HEALTH		
The community doesnt have a health post, attending their medical needs in the health post of the neighboring community of Papaturro, occasionally receiving visits from medical brigades.		
EDUCATION		
The community has 1 schools with elementary multigraded day education		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few houses have solar ilumination system purchased on their own, they also use candels, flashlights and gas lamps. The SIN lines are 45 km away.		
COMMUNICATIONS		
The community has cellular telephone coverage of Movistar, Claro and Kolbi (Costa Rica), thanks to its proximity to the antennas located in the Republic of Costa Rica.		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
The comunal population agree to contribute with the sustainability quota		

San Miguelito

Is located in the southeast of Nicaragua, 253 kilometers away from the city of Managua, and 53 kilometers away from the departmental capital of Rio San Juan, San Carlos, with coordinates 11 ° 24.0 "North Latitude and 84 ° 54.0 "West Length.

To get to the city of San Miguelito, there are two access routes: land and water.

Terrestrial: includes the 253 km of paved road Managua - Acoyapa - San Miguelito.

Aquatic: using public transport that leaves on Mondays and Thursdays in Granada at 3 o'clock in the afternoon.

In the political-administrative framework, the municipality has a territorial extension of 1,096.59 square kilometers, is divided into four settlements and 32 counties or communities.

The main economic activity is livestock, secondly agriculture (beans and corn) and third, artisanal fishing.

The predominant climate is humid tropics, characterized as semi-humid. Rainfall varies between 2,000 and 2,400 mm.

The topography is irregular, the greater slopes ranks go between 15 - 30% in the highest parts and in the lowest part between 2 and 4%, with an average height of 44 msnm. The soils of the area are characterized by being clayey, black, heavy, with drainage problems.

As for the health sector, the municipality has 7 infrastructures, 6 rural health posts and 1 urban health center, with 66 human resources, 28 in health posts and 38 in the health center; with 15 health care programs for the population. The most common causes of consultation in the municipality are: skin diseases, diarrhea, respiratory, parasitism, pregnancy control, growth and development.

The Ministry of Education reports that in the municipality of San Miguelito there are: 26 schools throughout the municipality, corresponding to pre-school, elementary school, multigrade and high school levels, which are attended by a total of 56 teachers.

The electric power of the municipality is supplied by the national network, for which adequate and permanent voltages are available. However, this service only reaches the urban center and 13 communities, it is administered by the DISSUR Company.

The telecommunications service, has a coverage of 70% in telecommunications of the communities of the municipality and the quality goes from regular to good, in the urban area there is coverage of the two companies (Claro and Movistar), in the rural area only Movistar

The most abundant fauna in the area are the fish; gaspar, snook, snooker, bream, guapotes, lagoons, sawfish, sharks, (only freshwater) tarpon, machaca, sardines and tilapia; As for birds, the most common are parrots, parrots, chocoyos, toucans, hawks, buzzards, herons, garzones, Martin Pescador, sparrows, chachalacas, turkeys, peacocks, quails, guises, ravines, carpenters, carrots,

gooseberries, ducks needle, mallard, among others; the reptiles, black and green iguanas, lizards, snakes, (velvets, corals, blood snakes, rattlesnakes) lizards, cuajípales, cherepos and a great diversity more.

COMMUNITY NAME		El Ojoche
LOCATION		
Department	RÍO SAN JUAN	
Municipality	SAN MIGUELITO	
Coordinates	N 11°32.679´ and O 84°47.390´	
Distance Km	20 km from San Miguelito	
ACCESS ROADS		
Terrestrial	20 km	
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	51	wood and zinc
Health Center	-	
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Milking of cattle for delivery to Milk stockpiles	
Agriculture	Sowing of basic grains, for family consumption and marketing	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, predominantly flat relief and presents elevations between 20 and 40 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides provoked by rains caused by hurricanes		
HEALTH		
Water for human consumption is obtained from artesian water wells in most of the homes		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 5 km away		
COMMUNICATIONS		
There is cell phone signal Movistar in higher areas of the county		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained that 94% of the population is willing to give a C\$ 150.00 monthly contribution of sustainability.		

COMMUNITY NAME		El Peñon # 2
LOCATION		
Department	RÍO SAN JUAN	
Municipality	SAN MIGUELITO	
Coordinates	N 11° 33. 644' and O 84 ° 48. 425'	
Distance Km	18 km from San Miguelito	
ACCESS ROADS		
Terrestrial	18 km	
Water		
Air	-	
COMMUNITY INFRASTRUCTURE		
	Quantity	TYPE OF CONSTRUCTION
Housing	53	wood and zinc
Health Center	-	
Schools	-	
Community Center	-	
ECONOMIC ACTIVITIES		
Livestock	Milking of cattle for delivery to Milk stockpiles	
Agriculture	Sowing of basic grains, for family consumption and marketing	
Fishing	-	
Tourism	-	
NATURE		
Type of weather	Monsoon climate	
Type of soil and relief	Clayey, predominantly flat relief and presents elevations between 20 and 40 meters	
RISKS OF THE AREA		
The area is affected by the trajectory of hurricanes in the Caribbean Sea, the population did not report occurrence of landslides provoked by rains caused by hurricanes		
HEALTH		
Water for human consumption is obtained from artesian water wells in most of the homes		
ELECTRIC POWER - OTHER MEANS OF LIGHTING		
Few homes with solar lighting systems acquired on their own expense, the rest used candles, light bulbs and lamps. The SIN Network is 3 km away		
COMMUNICATIONS		
There is cell phone signal Movistar in higher areas		
ACCEPTANCE OF THE POPULATION WITH CONTRIBUTION OF SUSTAINABILITY		
Data obtained that 94% of the population is willing to give a monthly contribution of sustainability of C\$ 150.00		

TECHNICAL SPECIFICATIONS

1. Aspects Related to Construction

The Ministry of Energy and Mines hereinafter the “ Employer” as an institution of the public sector through the Project Management Unit (PMU) and through Supervising Engineers at the construction site is obliged to follow up, monitor and administrate the present contract, including but it’s not limited to, enforcing the contractual clauses, technical specifications, current regulations for construction and electrical installations, labor and environmental laws and regulations, in accordance with the stipulations thereof, ensuring that the quality of the goods and jobs are required and offered.

For this purpose, the Employer has tendered the services of installation and supply of equipment, accessories and other parts necessary for the execution of the project; with this the best offer will be awarded.

The Contracting party (may/shall) be a Korean construction company with sufficient Financial Liquidity, which in turn may hire the services of a Sub Contractor company that must be Nicaraguan, whose knowledge of the area, logistics, construction methodology, technical qualification of the staff, representation of the commercial brands of the most relevant goods to claim guarantees, among others, is appropriate to execute the works subject to this contract.

It is the obligation of the Employer not to allow any kind of environmental damage prior to, during or after the works in which The Contracting party or Sub Contractor is involved, as well as to enforce the Labor Laws in force in the Republic of Nicaragua, among them the welfare of workers in both hygiene and occupational safety (rubber boots, helmets, leather boots, dielectric gloves, tools with insulators, etc), Labor aspects such as, the respective payment to workers for their salary earned in the first 15 days of the monthly or monthly, weekly payment of per diems (breakfast, lunch, dinner), lodging in the case that is not provided with tents and payment of overtime; all in accordance with the labor laws and minimum wages in force for the Construction Sector of the Republic of Nicaragua.

"The Contracting party" is not exempted from any type of legal liability for damages or losses caused in the properties of the beneficiaries, schools, health centers or community centers, as well as the sub contracted personnel or third parties outside the project resulting from deaths accidents in the sites where the works will be executed.

The Contracting party shall give his Sub Contractor the continuous, precise and exact follow-up on the sites of the works in accordance with the norms, laws or regulations of the Construction Sector and the Electrical Installations Code of Nicaragua (CIEN).

Any technical provision not indicated in this document must be evacuated in due time and form to the Employer, likewise, any change of what is offered in the supplies must be required prior with written authorization through the official channel.

The Employer has the legal authority to request The Contracting party to withdraw any Employer of its staff, personnel of the sub-contractor company or substitute it in the project, when fully justified, both for contractual breaches and any other situation that puts the work at risk, security of the personnel of the Employer, or that any worker incurs in bad faith to delays or in search of diminishing their costs is punishing the project financially.

On the other hand, it is the right of the Employer to request a copy of the Contract signed between The Contracting party and Sub Contractor when it observes that the financial resources granted in advance for the project are not being used for such activities, without prejudice to the existence of one or more contractual breaches, must be preventive in order to avoid the execution of the advance or fulfillment guarantees provided by The Contracting party.

Likewise, the Employer will ensure the correct use of project resources, materials acquired as a function thereof and the granting of the respective tax exemptions for goods and services provided by The Contracting party.

a) Contractor:

The Contracting party is the legal entity or company domiciled in the Republic of South Korea, which has the technical and financial capabilities to execute the project that is the subject of this contract.

The Contracting party must ensure the good execution of the work, provide the technical and financial resources necessary to comply in time and form with the offer subject to this contract,

including sub contract a legal entity or company domiciled in the Republic of Nicaragua, that provides the logistics and technical resources required in order to comply with each and every one of the scopes contained in this project.

It is the obligation of The Contracting party to safeguard its personnel from domicile in the Republic of Nicaragua, provide the resources (mobilization, food, lodging, life and health insurance, etc.) in order to avoid any type of situation that directly or indirectly affects the progress of project activities.

As well, it is the obligation of The Contracting party to comply with and enforce compliance with both its personnel and the Sub Contractor with the Nicaraguan Legislation regarding Labor Laws, Construction Regulations and the Electrical Installations Code of Nicaragua, as well as the technical specifications of the present document, offer, methodology and execution schedule, thus procuring the delivery of a project with the quality offered in it.

It is The Contracting party's responsibility to sign a contract with the Sub Contractor for the construction and supply services of materials and / or accessories at the local level, which is suggested to be performed before an Attorney and Notary Public domiciled in the Republic of Nicaragua, where limit the responsibilities and / or specific scopes by the Sub Contractor in the project, likewise, must indicate the respective obligations that the Sub Contractor will have with its personnel such as:

- i) Payment to their employees of the salary (biweekly or monthly).
- ii) Extra hours.
- iii) Health and life insurance.
- iv) Christmas bonus and holidays proportional to the time worked on the project.
- v) Safety and hygiene equipment.
- vi) Means of transport or mobilization to the site of each project.
- vii) Travel Expenses (Breakfast, Lunch, Dinner).
- viii) Lodging to be paid when there are no temporary facilities provided by the Sub Contractor to its employees at the project sites.

b) Sub-Contractor:

It is a legal entity or company duly incorporated in the Republic of Nicaragua that has the logistics and technical resources necessary for the execution of the project. Likewise, the Nicaraguan Legislation complies with and enforces its personnel with regard to Labor Laws, Construction

Regulations and the Electric Installations Code of Nicaragua, as well as the technical specifications of this document, offer, methodology and execution schedule, trying with it the delivery of a project with the quality offered in it.

The Sub Contractor will be key in the execution of the works because it depends on the significant or substantial progress in the project activities, therefore, it is the sole responsibility of The Contracting party to select the best Sub Contractor in order not to punish the project with poor quality materials, cheap labor or have problems of logistics at the time of construction.

c) Applicable Legislation

Regarding the legislation applicable to the project, it refers to the following:

- i) Labor legislation (Law No. 185 Labor Code, Law No. 618 General Law on Occupational Health and Safety, and Law No. 625 Minimum Wage Law): Nicaraguan workers hired by the Subcontractor shall be regulated according to the Labor legislation and regulations in force in the Republic of Nicaragua, for this purpose, will enjoy all the benefits applicable in "Contracts for Services" for workers for a specific time or for a project, whose minimum wage that will apply is that applicable to the Construction Sector.
- ii) Foreign workers hired by The Contracting party will be regulated according to the labor legislation and regulations applicable in their country of residence and The Contracting party will be responsible for complying with any type of benefit to which their employee is entitled.
- iii) In the event of death for any reason (natural, induced or self-induced) by employees of The Contracting party, the Contracting Party is exempt from any judicial or extra-judicial request.

d) Building Regulations and Electrical Installations Code of Nicaragua (CIEN):

The Contracting party will build the internal electrical installations and installation of photovoltaic systems according to the rules and regulations in force in the Republic of Nicaragua applicable for that purpose.

e) Control and Monitoring of the Project

The Employer will prepare a technical-executive report on the execution of the work on a monthly basis, which will include the advances or delays that have occurred, the monitoring of the schedule of activities, compliance with the methodology offered, labor aspects of the workers of The Contracting party or Sub Contractor, possible problems and decisions to consider or adopt to correct these, likewise, will be informed the eventualities that have occurred during the execution period in order to foresee any situation that causes damage or delays in the project and that puts at risk the same.

f) Works Schedule

The Contracting party in his technical - economic offer must deliver the proposed Schedule for the execution of works and supplies.

The Schedule will contain the general and specific activities considering the proposal of The Contracting party, also this schedule is the one that will be part of the contract to be signed, for which, it must be widely elaborated, understandable, comprehensive, realistic and measurable in time.

The Contracting party during the execution of the project will follow up on the proposed Schedule, thus being able to report any type of arrears and request alternative solutions to correct them.

It is the responsibility of The Contracting party to comply with the proposed schedule given that any unjustifiable delay will cause default to the Financier by The Contracting party, which is not convenient since it has been defined as part of the present project execution with a Korean company of high level and a sub-contractor Nicaraguan company with logistic and technical capacity.

The extension of the deadline for the execution of the project is not foreseen in the present project, for which reason The Contracting party must invest all the necessary financial and technical resources to complete the project's completion in the times established in its offer.

g) Constructive Methodology

The Contracting party, when delivering his technical - economic offer, must provide information regarding the Constructive Methodology that will be evaluated by The Contracting party, in which he will establish the project execution proposal including, not limiting and widely explaining all those

technical, logistical, storage, financial, organizational, etc. with which it is intended to face the works and supplies of this contract.

The constructive methodology must be developed in a realistic, understandable, comprehensive, direct, assertive, functional technically and operationally, considering all aspects of engineering, logistics, storage, manufacturing, organizational and financial that affect or could directly or indirectly affect the achievement of the project, without omitting those aspects that could be crucial or determinant to start or finish the work.

It is important the delivery of the verifiable and reliable base documentation or support under which the constructive methodology has been developed since the project has determining aspects that, if they have not been considered in the methodological proposal, it will be impossible for The Contracting party to comply with the project execution.

The Contracting party under the proposal presented in the offer is reserved to evaluate with the best or worst score the proposed constructive methodology that is lacking support, information, logic, engineering, organization, logistics, financial resources to allocate or unskilled technical personnel.

h) Selection of Suppliers of local materials

The Sub Contractor must provide in the offer the respective information to the location of the material banks for the aggregates (gravel and sand), likewise, about the cement and steel suppliers proposed to be used in the project, in addition to providing information on the respective logistics providers, location of warehouses for storage and distribution, indicate the dispatch volumes of the supplies by region, among other necessary aspects to be known by The Contracting party.

Likewise, the manner in which the water to be used in the project sites will be transported should be indicated, given that in most communities there is no potable water, and the use of water suitable for preparing the concrete is required.

i) Guarantees to be provided by the Contractor

The Contracting party shall provide the respective guarantees indicated in this Document or agreement.

1.1 Opening of the Project Logbook

The Contracting party, together with the Employer, will open a logbook for each region or work front where the daily incidents will be recorded in each community. To do so, the Log will have a legal support in any situation, could occur or in the event of any claim of situations that is considered abnormal, rejected works or goods - services that do not have the appropriate quality or required by the Employer, likewise, any non-compliance related to the execution schedule of the works.

The signatures registered in the project logs were from the Employer’s: the Program Director, Technical Program Coordinator, Engineering and Supervision Coordinator and Supervising Engineers. On behalf of The contractor, they will be: the Legal Representative in Nicaragua, Resident Engineers of the Contracting party or Sub Contractor; by the consulting firm: Legal Representative in Nicaragua and Consulting Engineers.

They are exempt from signing the logbook any other personnel not indicated in the previous paragraph.

1.2 Packaging and Transport of Goods

The Contracting party must pack by appropriate means, the equipment or supplies from the Port of origin to each project site; therefore, it is necessary to pack for every different environmental conditions and handling condition during transport (maritime, land, water) in order that they do not present any damage during their transfer. It is the obligation of The Contracting party to ensure safe, reliable transportation and have the necessary logistics for this activity.

The loads must be fixed on the means of transport with nylon tapes for high resistance, in order to avoid these detach from the means of transport, fall and cause them any physical damage.

Likewise, it is necessary to have the respective transport insurance policies for each transfer in order to reduce the risk of economic loss of The Contracting party.

1.3 Tax Exemptions for Goods and Services

The Contracting party that participated from the moment of the invitation to submit proposals or expressions of interest, and that have been selected through the competitive process for the supply

and execution of the works, will enjoy tax exemptions for the imported or acquired goods local level and abroad, for the installation services of photovoltaic systems, municipal taxes, and others according to the Loan Contract and the Nicaraguan Legislation for projects with renewable energy sources.

For this purpose, the Contracting party through a written request to the EMPLOYER, must present the necessary supports in order to enjoy such tax exemptions derived from this project. The tax exemptions for good or services not apply for Sub Contractor or Manufacturer.

1.4 Mobilization and demobilization of personnel

For all purposes, the personnel hired and sub contracted by The Contracting party shall be mobilized by the means provided by it, without this representing an additional expense for the employee since the contract in mention includes all those direct, indirect costs, administration and tax exemption. Municipalities, exemption from taxes for services and goods acquired abroad or locally.

The means of mobilization that The Contracting party is obliged in the framework of the present project to have for its personnel which must be mobilized to the different project sites include, are not limited, nor are they exempt from being used for the operation of the works:

1. Means of Land Mobilization: The means required for this purpose are four-wheel drive vehicles (4x4), with tires suitable for highly rural roads, devices for towing other vehicles that are directly or indirectly involved in the execution of the works.

These vehicles can be acquired through purchase, rent or lease by The Contracting party or Sub Contractor for the project execution.

On the other hand, in places where access with 4 x 4 vehicles is not possible, the hiring of horses that transport the personnel of The Contracting party or Sub Contractor to the project sites must be considered, as well as the transportation of materials from construction and goods to be used in the works. The staff of The Contracting party and Sub Contractor is exempt from covering these costs with their own resources or salary since it has been included in the project budget.

2. Means of Aquatic Mobilization: The means required for this purpose are boats or boats that operate with an outboard motor, for it The Contracting party or Sub Contractor may rent

such means, which must have a lifejacket and be in perfect condition of operation. These means must transfer goods to some communities where access by land is not possible, therefore, The Contracting party must ensure that the means to use is in perfect condition, likewise, any property that is damaged or lost must be supplied by The Contracting party or Sub Contractor with the same quality and will not be subject to tax exemptions.

The Contracting party or Sub Contractor is obliged to provide portable temporary facilities for its employees, these include, but are not limited to, appropriate conditions for sanitation (at least one portable toilet for use by workers and a portable toilet or mobile for use by the engineering personnel of The Contracting party, Sub Contractor and the Employer Supervisor, Supervisor of the Community Contracting party), temporary tents and portable beds in the event that there are no conditions for the staff to spend the night, alternative lighting means (portable systems of photovoltaic energy or diesel), likewise, drinking water for the consumption of its personnel, mobile tanks for transporting water suitable for the manufacture of concrete and a portable hut to be used by the supervising engineers of Contracting party and Employer in the community that will act as a base in the project sites.

On the other hand, The Contracting party must guarantee the rental of the physical spaces (warehouses) necessary for the protection of the construction materials, equipment to be installed, electricity or construction tools, as well as the respective care of the facilities by means of a responsible for warehouses and security personnel.

1.5 Materials used in the project

The Contracting party shall comply with the standards or technical standards required in this document for each of the following materials:

- a) Sand: The project will use motastepe type sand, natural or manufactured, which must comply with ASTM C33.
- b) Gravel: Thick aggregate (natural stone or crushed gravel) that must comply with ASTM C33 will be used.
- c) Cement: The project will exclusively use portland or modified portland cement, which must comply with the specifications of ASTM C150 or ASTM C1157.
- d) Water: The water to be used for the concrete mixture of the support base of the photovoltaic panels will comply with the ASTM C1602 Standard.
- e) Steel rods: The steel rods to be used in the project for the grill of the shoe or base of the metallic support structure of the Photovoltaic Panel shall be 3/8 "Type Std, shall comply with ASTM A615-12, for grade 40.

Millimetric steel will not be used in the project, nor any other that complies with ASTM A1064-13.

- f) Electrical conductors: The conductors to be used will be of the THHN type, soft copper multi-wire, with thermoplastic cover of polyvinyl chloride (PVC) according to the UL-719 Standard, they will be used to make the electrical derivations to receptacles and switches. They are designed on the maximum current capacity at 90 ° C in dry or wet environments and 75 ° C for wet environments, so that their current capacity at 60 ° C is not affected. The maximum operating voltage will be 600 V and the thermoplastic cover must not propagate the flame.

1.6 Preliminary Works

The Contracting party must coordinate with the Employer the access to the communities where the project will be executed, this must be done in a time no longer than 15 calendar days after the receipt of the advance payment, whose date will coincide with the Letter of Beginning of the Works and It will be validated with the Payment Notification sent by the Exim Bank.

The Contracting party and his Sub Contractor must coordinate effectively so that he receives at least the same percentage of the advance payment regarding their local installation and supply services. Equally, it is necessary the logistics prior to the needed of the project which must be assured by The Contracting party from the moment of signing the negotiation of the Contract with the Sub Contractor.

The Contracting party must inform the physical address where he will receive notifications from the Employer, likewise, he will have the necessary medical insurance for his foreign personnel and through his Sub Contractor is required to have the necessary medical insurance for the local personnel.

The Project requires all the logistics, financial resources, technical and administrative capacity necessary, in order not to have any type of inconveniences that represent a risk for the final achievement of the project in the times offered by The Contracting party.

On the other hand, it is necessary to guarantee the necessary means for the execution works during the rainy period (May to January) of each year, these means are those chemical elements for the fast drying of the concrete bases, grounding of the supports of panels, suitable means of transport for the transfer of goods and personnel to the project sites, and elements of industrial safety of their personnel.

The activities to develop in this stage are the following:

1. Delivery to the Employer the Execution Schedule of the construction Works according to the methodology, execution times offered, establishment of the warehouses, list of The Contracting party's personnel residing in the country and list of employees of the Sub Contractor present in the works, list of vehicles or any other means of transport to be used, list of tools to be used, verification of medical insurance of each foreign or local worker, copy of contracts for services for project workers for a specific period of time, monthly copy of the Payroll of Local Personnel where indicates he has received the salary and other benefits to his full satisfaction.
2. Identification of the dwelling, school, health center or community center where the photovoltaic system will be installed.
3. Control and monitoring of the on-site project of the works and weekly follow-up meetings with the Program Director by the contracting party.

1.7 Execution of the Works

The Contracting party and / or Sub Contractor must verify the following before carrying out the works.

1. Comprehensive review of electrical wiring, this must not have scratches, scratches or any other superficial or deep damage. In the case that it had that wiring it could not be used in the work.
2. Review of the accessories to be installed (switches, receptacles, spark plugs, breakers, electrical panel, earth bar, controller, inverter, battery, line pipes, metal boxes, etc., in case they had no damage may be used in the work.
3. The presence on the project site of the materials and tools necessary to start the execution of the works.

On the other hand, The Contracting party must jointly with his Sub Contractor at the beginning of the installation in each dwelling that there are the minimum necessary aspects for that purpose, for this reason it is necessary that in the presence of the Employer, they perform the required work of according to the following:

a) Civil Works

1. Transfer of construction materials to each householder, school, health center or community center.

The Contracting party must transfer the construction materials to the sites where the works will be executed.

For this purpose it is necessary to have the logistical and technical means (vehicles 4 x4, horses, water boat, water cisterns, vibrators for concrete, emergency plant, electrical and masonry tools, drills, drill bits for concrete and wood, bolts with their nut, anchor bolts, keys for bolting, etc.).

2. Carry out the necessary excavations for the concrete base.

The Contracting party must carry out the necessary excavations taking into consideration the approved plans, for this purpose it will be limited to digging with masonry tools the space required for the concrete base, it will be avoided as much as possible doing any damage to potable water pipes that may exist in the project site, in the event that occur under its account and risk should be respective repairs subject to approval by the contracting.

The material extracted during the excavation will be disposed within the property of the beneficiary, having to consult exactly in which site can be located in the property.

During the excavations it is possible to find some type of rocky material, for it in conjunction with the Employer the new excavation will be decided. The site where previously it has been excavated will be filled with the extracted material, and it will correspond to The Contracting party to carry out this work without cost.

3. Conformation of the land where the base of the support structure of the photovoltaic panel will be built.

In the area of execution of the project it is possible to find some unevenness of the land due to the topographic of the same, it is necessary to level the land until reaching the required depth according to the final designs of the project.

It is necessary that The Contracting party executes any type of manual compaction or soil improvement according to what is described in approved plans.

4. Formed to build the base of the support structure.

The Contracting party will execute the framework for the construction of the support structure base, which can be made of wood (pine), metallic, or with plywood. In any case, the best option will be decided on the project site, as well as having enough forms in order not to wait until the concrete is dried in which the forms have previously been used.

The fixation of the forms should provide the necessary pressure for the base to be formed, this pressure can be exerted with nails in wooden form, bolts and nuts in steel forms, and nails in plywood forms.

The form will be removed until the concrete has taken the appropriate resistance, and should not be cause for delays in the works.

5. Arming of the grid of the concrete base, introduction of the pipe from the house to the support structure of the photovoltaic panel, likewise, the fixing of the latter with lashing wires in order to achieve the necessary verticality.

The assembly of the iron grill for the anchoring of the support structure of the Photovoltaic Panel must be done according to the design, in order that it supports the different winds, floods or landslides to which it may eventually be submitted.

There will be a separation between the iron grill and the ground, using 0.10 cm concrete dies previously prepared by The Contracting party, and the grill must be completely covered with concrete.

Likewise, the horizontal and vertical joints between the rods of the grid will be made using steel wire tie, in accordance with the construction roles that govern the Construction Sector of Nicaragua, for this, the experience of the workers is necessary.

Regarding the separation between the grill and the form, it will be 0.5 cm, completely obligatory so that there is no exposure of the iron to the moisture and this damaged the structure and its base.

6. Elaboration of the concrete mixture using the correct proportions of water, gravel, cement and sand to obtain the required concrete strength.

The Contracting party shall have on the site of the works the construction materials required for the preparation of the concrete mixture. This requires the use of Portland type cement, water without dirt particles, garbage or chemical contamination; gravel with the required resistivity and Motastepe-type sand to obtain concrete strength at 3,500 PSI.

7. Concrete filling of the base for the support structure.

To avoid air bubbles in the concrete as much as possible, after filling the form with the concrete, electric vibrators will be used that will work with a gasoline or diesel-based electric plant.

The estimated setting time is 28 days to achieve the 3,500 PSI, However it will be determined in the mix design to be provided by The Contracting party, which is why, at no time should the pre-form forms be removed before reaching this concrete strength requested.

Likewise, the Employer may request samples of concrete for analysis in a laboratory to be selected by it in each site in which there is doubt about the use of the mix design that has been approved.

On the other hand, The Contracting party must irrigate with water the bases of the support structure at previously defined times with The Employer, preventing the formation of cracks or any other exogenous factor that damages the base.

8. Verification with level to achieve the verticality of the support structure.

The Contracting party, together with the Employer, will verify the verticality of the support structure of the Photovoltaic Panel at a level, with the purpose that it is correctly installed and does not suffer deflections caused by the wind that can structurally impact until collapsing.

The supporting structures must be erected from the moment prior to the filling of concrete, and duly fastened with steel tie wire as a tension to avoid its deflection.

The Photovoltaic Panel and the wiring must be installed until the concrete of the bases of the support structure has achieved its resistance.

b) Electrical works

1. Define the route of the pipe for the power wiring from the Photovoltaic Panel to the house.

Jointly with the Employer will be defined the optimal route for each housing of the pipe for the wiring in which the budgeted materials are actually used for internal installations, this should be done carefully in order not to exceed the budget of materials, likewise, avoid any aspect that leads to subsequent delays.

In the presence of the owner of the home, the activities will be carried out in order to avoid theft by the workers of the Sub Contractor. Likewise, it is necessary to define the type of fixation to be made based on the walls and roof of each house. In the case of roof beams made of wood or steel, metal flanges will be used to secure the pipeline. In the case of concrete beams, drill bits will be used to drill the hole and insert plastic spikes for fastening the metal flange.

2. Define in each dwelling, school, health center or community center the exact place where the Electric Panel, Controller, Inverter and Battery will be installed.

The Contracting party with the presence of the Employer will define, based on the walls of each house, the type of fixation to be made.

In the case of wood or zinc walls, bolts with their nut for fastening the Electric Panel will be used. If the walls are concrete, drill bits will be used to drill the hole and insert expansion bolts for fastening the electrical panel.

Regarding the controller, inverter and battery will be placed in a metallic cabinet previously supplied by The Contracting party, so it will not be anchored to the floor.

Define the exact path of the pipeline for receptacles, switches, spark plug clamps and install registration boxes with its tow press connector.

The Contracting party with the presence of The Employer will define, based on the walls of each house, the type of fixation to be made.

In the case of wooden or zinc walls, bolts will be used with their nut to fix the receptacles, dampers or spark plugs, all will be installed in a superficial way. In case the walls are made

of concrete, drill bits will be used to drill the hole and insert plastic spikes to secure the receptacles, switches, spark plug holders (spark plugs) for the spark plugs.

Always avoid the passage of channeling that hinders the free movement of people, in any case with regard to the doors should the air pass channeling.

The registration boxes will be installed with their connector to join and fix the channeling, likewise, they will be installed with screws in case the wall or ceiling is wood or metal, if concrete walls will be installed with plastic spikes through previous hole made with a drill that will have the special bits to use.

3. Install the pipes of conduits from the Electric Panel to the respective register boxes.

The line pipes will be installed with their respective connector in a linear and perpendicular way, as the case may be, likewise, they will be installed with screws in case the wall or ceiling is wood or metal, in case concrete walls will be installed with plastic spikes through a hole previously made with a drill that will have the special bits to use. For all purposes, the fasteners will be made with metal flanges suitable for the diameter of the pipe.

4. Introduction of internal electrical wiring and connection from the Photovoltaic Panel to the Controller.

The Contracting party shall insert an appropriate metallic probe into the sewer pipes for the subsequent probing of the electrical wiring, for which purpose it shall be carried out with all possible care in order to avoid scratches, injuries, or tearing of the conductor's insulating material.

The applicable color code must be respected according to the CIEN, and the connections must also be made with red, black, green or blue wire nut, depending on the color of the driver. No splicing of conductors between register boxes to avoid any kind of short circuit.

The colors of external insulation of the conductors to be used will be governed as follows:

- a) Phase: Red, blue, black
- b) Neutral: White
- c) Ground: Green or yellow-green

In terms of the height of fixation related to the FFL (finished floor level) for the accessories will be as follows:

- a) Outlets: N.P.T
- b) Switches: N.P.T
- c) Electrical Panel: N.P.T
- d) Spark plugs holder: N.P.T

Regarding to approximate distances (+ 20% per thread) to use for drivers defined by beneficiary has been estimated as follows:

Housing:

- a) Electrical Panel to Outlets:
 - Outlet 1: 1.7 x 3-wire socket
 - Outlet 2: 3.4 m x 3 wires
- b) Electric Panel to Spark Plug Holders:
 - Damper 1: 1.7m x 3-wires
 - Damper 2: 3.4 m x 3 wires
 - Damper 3: 5.1m x 3-wires
- c) Photovoltaic Panel to Controller: 5 m x 3 wires
- d) Controller to Inverter: 1 m x 3 wires
- e) Inverter to Electric Panel: 1.7 m x 3 wire

Schools:

- a) Electrical Panel to Outlets:
- b) Switch Electrics Panel to Spark plug:
- c) Photovoltaic Panel to Controller:
- d) Controller to Inverter:
- e) Electric Panel Inverter:

Health centers:

- a) Electrical Panel to Outlets:
- b) Switch Electrics Panel - Spark plug holder:
- c) Photovoltaic Panel to Controller:
- d) Controller to Inverter:
- e) Electric Panel Inverter:

Community centers:

- a) Electrical Panel to Outlets:
- b) Switch Electrics Panel - Spark plug holder:
- c) Photovoltaic Panel to Controller:
- d) Controller to Inverter:
- e) Electric Panel Inverter:

5. Driver Polarity Tests

Polarity tests of the installed conductors will be carried out in order to avoid any type of short circuit.

6. Install controller, inverter and batteries

The Contracting party under supervision of The Employer will install the controller, inverter and batteries, in the site previously selected by the parties and the beneficiary of the project.

7. Install wiring for power between controller, inverter, battery and Electrical Panel.

The Contracting party shall install with all possible care in order to avoid scratches, injuries, or tearing of the insulating material of the driver.

The color code applicable according to the CIEN must be respected, it will also be avoided to leave the polarities of batteries without their protector plastic, also in terminals each conductor will be fixed with the precision and accuracy required.

8. Explain to the beneficiaries the use and manipulation of photovoltaic systems.

The Contracting party at the end of the installation of the photovoltaic systems shall explain to the beneficiaries about the use and proper handling of the internal electrical installations and the photovoltaic system in order to avoid incorrect use that could cause damage to the equipment. Likewise, a format provided by The Contracting party must be filled in, where the beneficiary has received the goods and services to the satisfaction of the whole, in order to state that the installation has been complied with.

At the end of the project, a binder containing the copy of the format where it has been received by the beneficiary must be delivered by The Contracting party.

1.8 Final Activities

The Contracting party at the end of the facilities in each home, school, health center, community center must fill out a respective format for acceptance to the full satisfaction of the work done, this format must be signed by the Employer, Beneficiary, Contractor party and Sub Contractor, Community Leader; Equally, it must indicate the driver's quantities, accessories or any other material used by each beneficiary.

Of the materials to be used in the project, any surplus will be delivered to The Employer at the end of the works, it will be done by means of a reception certificate to be signed by the parties.

a) As Built Plans

The Contractor at the end of the project for each beneficiary, will deliver in AutoCad and two black and white printed copies, to scale, an As Built Plan in plant view where it will exactly locate the location of the accessories, electrical panel, photovoltaic panel, location of windows and doors, and indicate the construction material of the house.

b) Operation Tests

The Contracting party in the presence of the Employer will perform the respective operation tests of the Photovoltaic System (SFV) and internal installations, including those tests that may be performed at night to verify the autonomy of the batteries.

In the event that the tests have to be carried out at night, the necessary coordinations will be made in order to request entry into the facilities of each beneficiary.

c) Delivery of Manuals

The Contracting party will deliver the operation, maintenance and / or training manuals required in this project in printed form and in * .PDF in Spanish.

d) Operator Personnel Training

The Contracting party under this contract will perform the training or training to the operator's personnel in order that they know how to operate and maintain the different equipment supplied in the project.

e) Certificate of Final Receipt by Beneficiary

The Contracting party at the end of the works in each beneficiary must deliver in original and CD in file type * .PDF a "Final Acceptance Certificate" of the works to the satisfaction of the contracting party, for it must also indicate the accessories and quantities installed, the geographical location, serial numbers of each well installed, start date - completion of the works, community, municipality, beneficiary name, etc.

f) Project Logbook Closing

The Contracting party, in conjunction with the Employer, will close the activities in each community by logging when the total of each work is completed by beneficiaries. Likewise, the original of the Logbook will be delivered to The Employer.

g) Closing of Warehouses

The Contracting party must terminate any type of contract that has for rental of warehouses, cancel all pending expenses for this item, energy or potable water, in order to avoid any type of inconvenience or breach with the service provider.

h) Staff Demobilization

The Contracting party will demobilize the personnel in the project sites as 100% of the facilities contracted by the community have been fulfilled, as well as remove all types of garbage from their personnel or works, provisional installations, and any other damaged means of transport, equipment, tools, and material left over from the project, the latter must be delivered to the contracting party.

i) Termination of Definite Time Contracts

The Contracting party must terminate any type of contract for a defined period of time for project personnel, whether for technical, administrative, accounting, warehousing or engineering personnel, in order to pay any pending cancellation with their foreign workers or those contracted by the Sub Contractor.

It is the obligation of The Contracting party to require the local Sub Contractor the necessary supports of the cancellations of the personnel contracted for the project, likewise, to close any contract derived from this project both in supplies and services acquired through the Sub Contractor.

The Contracting party will pay all the pending with suppliers, sub contractors, or any other commitment under this agreement.

B. Employer's requirements

I. Employer's Requirements:

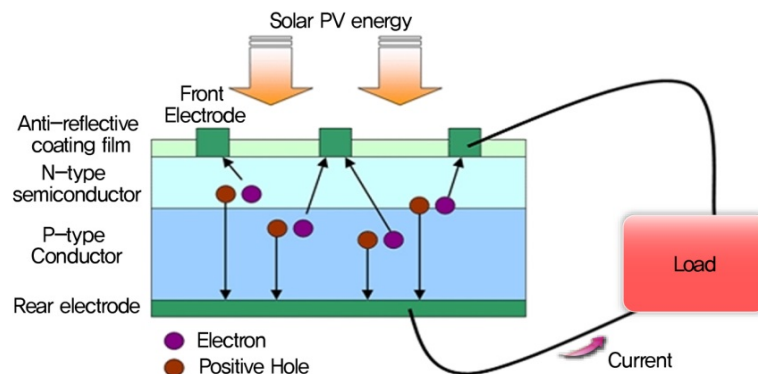
1. Photovoltaic System:

- A. Site clearance the installation ground.
- B. Construction:
 - The concrete base for PV module.
 - The protection house for power system
 - The electric systems (110V) from inverter to the households including: base, concrete poles, cabling, grounding with a completed system.
- C. Installation:
 - PV module supports, PV modules, battery storage cabinets, charging unit, inverters, battery, connection box... and other auxiliary parts to the load independent households.
 - Base, MCCB and completed spare parts.
 - Installation of in-house load system (breaker, socket, lighting lamp, cabling)

1.1. Outline of Photovoltaic Power System

a) Mechanism of Solar Photovoltaic(PV) Power System

Solar cells are devices to convert solar photovoltaic (PV) energy into electric energy using semiconductor mechanism

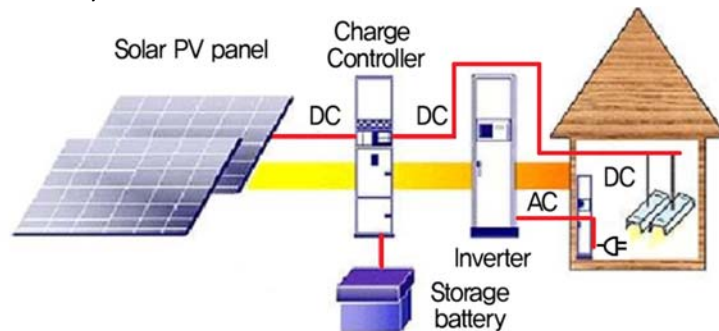


< Figure 1.4> Mechanism of solar PV power systems (silicon type)

b) System Connection Type

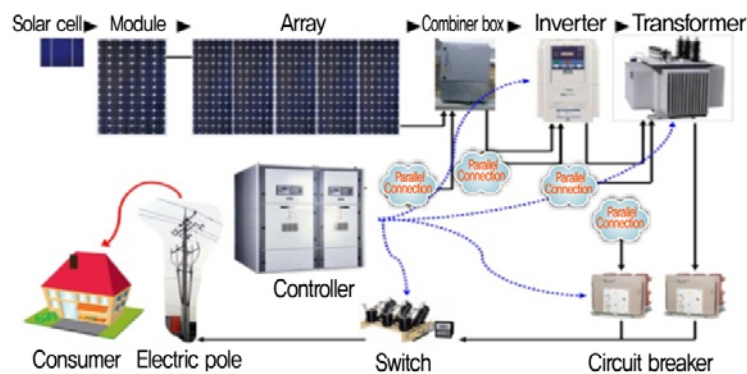
- Stand-alone PV power systems, which are an off-the-grid electricity system to supply electricity for out-islands, unmanned lighthouses & relay stations, satellites and other remote areas that couldn't be connected to the power grid, function to

deliver electricity to DC or AC loads using storage batteries or inverters. Thus, storage batteries are built in them with power grid lines separated from them, which indicates that system-generated reactive or active power and high harmonics have no impacts on the grid lines. But storage batteries used for the stand-alone PV systems are very expensive, and require spacious place to install in. Moreover, their use accompanies various problems or inconveniences (e.g., electrolyte filling, leakage or explosion, charge or discharge losses, etc.) by causing efficiency to be lowered.



< Figure 1.5> System configuration for standalone PV systems

- Grid-tied PV power systems are electricity generating solar PV systems to supply electricity for AC loads by directly connecting between a solar module and an inverter to ensure balanced maintenance between the alternating-current power supply of the grid line and the direct-current power supply generated from the solar module. The grid-tied PV systems can be divided into single-way and two-way types, out of which the former systems supply loads with electricity (generated from solar modules) using an inverter while the grid line delivers electricity to the loads only when they lack in electricity. The grid-tied PV systems are favorable in terms of maintenance, and need no expensive storage batteries. Also, their high efficiency allows them to be used as ideal PV systems for general households. However, countermeasures against such various technical problems as voltage variations, high harmonics, excess over electricity demand, etc. accompanied with connection to the power grid should be taken before they are introduced.

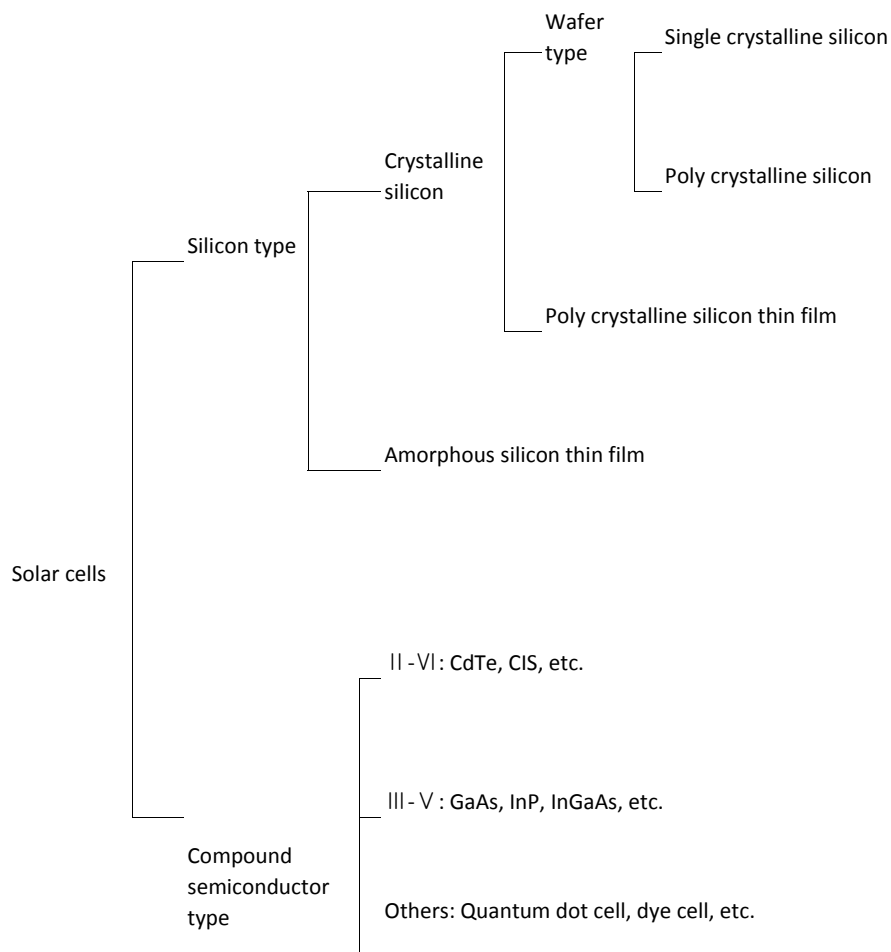


< Figure 1.6> System configuration for grid-tied PV systems

1.2. Components of PV Systems**a) Solar Cells**

- Types of Solar Cells

Solar cells can be ed into crystalline silicon types, amorphous silicon types, and compound semiconductor type depending on what kinds of materials are used as follows:



- Single crystalline silicon solar cell

When compared with poly crystalline silicon solar cells, single crystalline silicon solar cells work with high generating efficiency although they are a

little expensive. But their high generating efficiency guarantees a certain level of performance anywhere even in cloudy or rainy days..

- Poly crystalline silicon solar cell

Poly crystalline silicon solar cells are easy to mass-produce thanks to high processability and less expensive to supply, which is why they have commonly been used. But they are less favorable in terms of generating efficiency, compared to single crystalline silicon solar cells.

- Amorphous silicon solar cell

Amorphous silicon solar cells can be made by thinly put amorphous silicon to vacuum evaporation on glass metal wafers so that generating efficiency isn't so high. Hence, they are commonly used for calculators, watches/clocks, toys, etc.

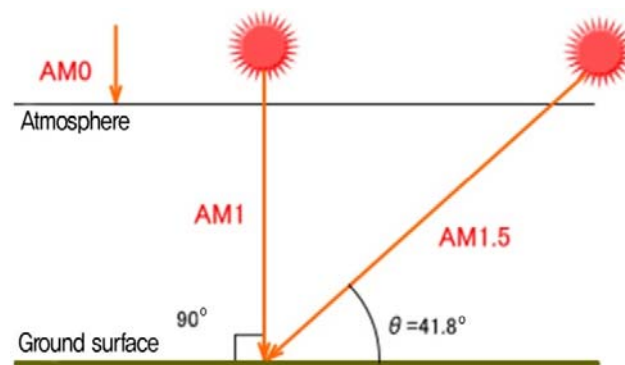
- Compound semiconductor solar cell

Typical compound semiconductor solar cells include single crystalline GaAs s, poly crystalline CIGS or CdTe s, etc. Most of them is characterized by direct band-gap photovoltaic absorption so that they can sufficiently absorb solar photovoltaic light just with several micrometers (μm), unlike crystalline silicon solar cells, which is why they are suitable for thin filming. Single crystalline multi-junction compound solar cells are highly efficient while materials requirements or process costs are substantial.

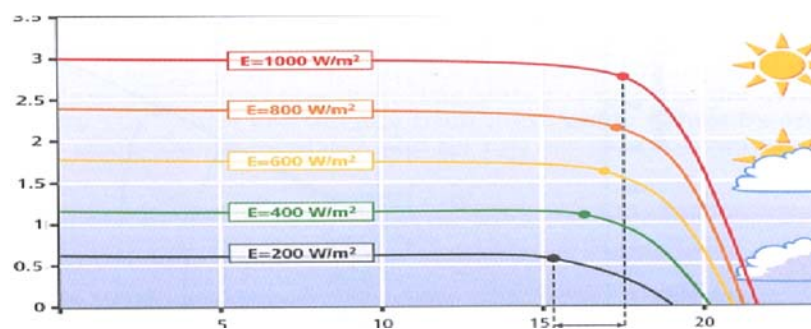
- Features of solar cells

- Irradiance

Irradiance means solar photovoltaic energy per 1 m^2 , which is estimated in W/m^2 . Generally, it amounts to some $1400\text{W}/\text{m}^2$ outside the atmosphere, but decreases to $1000\text{W}/\text{m}^2$ when solar photovoltaic energy has reached the ground after passing through the atmosphere. This value (i.e., $1000\text{W}/\text{m}^2$) is regarded as the one that can be achieved when the standard state of irradiance has been reached. Hence, changing irradiance accompanies a proportionate change in induced current and output power. Irradiance intensity, which is highly dependent on meteorological conditions, can vary on the absorptive surface depending on the installation direction or angle of solar cells. Hence, care should be taken when they're installed.

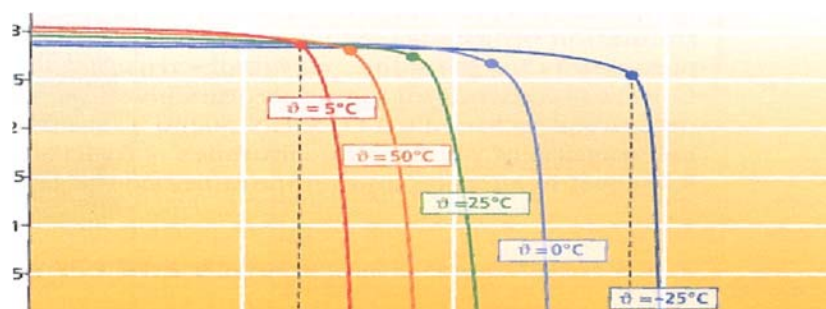


< Figure 1.7> Spectral distribution



< Figure 1.8> Irradiance properties of solar cells

- The generating voltage of solar modules drops with a rise in their temperature due to the impacts of atmospheric temperature or sunshine, which indicates that energy production is subject to change depending on the surface temperature of the solar modules, and that the impacts of efficiency reduction on energy production should be considered based on 25 °C. Although it's subject to the physical properties of solar cells, this rate of drop in generating voltage falls by some 0.4% with an 1 °C increase or decrease in the surface temperature of solar modules whose standard value is 25 °C. Accordingly, care should be taken to stay at 25 °C, if possible, when the solar power system is at its service.



< Figure 1.9> Temperature properties of solar cells

- Design specification of solar cells

A solar module means a of solar cells which are semiconductor compounds to convert solar photovoltaic energy into electric energy. It's possible to produce quality solar modules only with the combination of solar cells whose efficiency is high and similar among them. Silicon solar cells can largely be divided into single crystalline types and poly crystalline types. Basically, they are used in the form of p-n homo-junction. As for now, commercialized poly crystalline silicon solar cells show a conversion efficiency of some 13%, and are less efficient than single crystalline silicon solar cells although the former ones are less expensive by some 10% than the latter; the single crystal lines are among high quality materials with high purity and low crystalline defect, having a generating efficiency of as high as or higher than approximately 16%, or 1% higher than that of the poly crystal lines. Solar PV systems show a substantial difference in energy production depending on the efficiency of solar cells; it's reported that the corresponding difference amount to some 10% between poly crystalline solar cells and single crystalline solar cells.

Given that unit capacity requirement is small and it's relatively easy to procure module, it's recommended to use poly crystalline solar cells. Hence, it was planned to apply 80Wp for individual households and 250Wp for schools and public health centers. The following tables show a comparison among different types of solar cells& modules:

b) Inverter

An inverter is used to convert direct-current power (from solar cells) into alternating current power and supply electricity for loads. An inverter power circuit consists of semiconductor elements that function as a static transfer switch with no contact. Its input unit functions to deliver the input of each of solar cells to the power control unit, and the input end is equipped with respective circuit breakers and surge protection devices to protect s of circuits. It should be ensured that a bypass circuit can immediately output solar energy by positioning an input/output shut-off switch and a bypass transfer switch to OFF and ON, respectively, when the power control unit doesn't work due to its failure or isn't needed due to a lack of solar photovoltaic energy production. Inverters have a wide range of 75% to 90% in efficiency, which is why care should be taken in selecting optimal inverter type. In the case of this Project, various types of inverters, including small-capacity and large-capacity types, are required for a minimum of one household to schools and public health centers. Hence, it was planned herein to install sine-wave inverters of which efficiency was high and with which it would be possible to choose among various capacities and operate target loads stably. On top of that, with this inverter type, noise is low and electricity consumption is small when they are at their service.

c) Combiner Box

A combiner box, which is installed between the output of a solar module and the input of an inverter, is a device to facilitate the separation, repair or inspection of a target circuit by shutting off any region that fails to work normally. Major components of the array combiner box include circuit breaker, fuse, blocking diode, etc. Reliability, stability and appearance should be considered in selecting an array combiner box. The array combiner box should be installed where it will be easy to do repair & inspection works on it. In the case of individual households for which a module is directly connected to a controller, there is no separate combiner box. In the case of schools and public health centers, it was planned that the array combiner box would be installed on an outdoor independent panel on support footing, which would be helpful in facilitating repair & inspection works and preventing possible thefts.

d) Controller

A controller is used to control system charge by preventing storage batteries from being overcharged or undercharged.

e) Storage Battery

An application of stand-alone solar PV systems requires the installation of storage batteries since they are used where there is no service power supply. Thus, the storage batteries are among essential units in that they function to induce electricity supply when there is a lack of energy production or no sunshine available or at night. Especially, their electric performance and economic feasibility should be considered in selecting among different kinds of storage batteries, which include lead storage batteries, nickel-cadmium storage batteries, nickel-hydrogen storage batteries, lithium-ion batteries, etc. In this B/D, it was planned to apply MF(Maintenance free) / Gel type batteries whose applicability is high for alternative energy (e.g., solar PV power, wind power, etc.). On top of that, they are favorable in terms of stability, economic feasibility and reliability. Especially, the storage batteries should be temperature-, heat- and impact-resistant. Hence, it was planned to apply sealed maintenance-free types.

1.3. Design of Solar PV System

a) Design Installed Capacity

- Estimation Criteria

The design installed capacity of solar PV systems was determined considering power loads based on the distribution of target households and other public facilities. The following formula is a formula used to estimate the installed capacity of a solar PV power system:

Design installed capacity [W] = Loads / (sunshine duration (in hour(s) × system efficiency)

< Table 1.14>Estimation Criteria

Item	House	Schools	Village Community Center	Public Health Center
Criteria of Loads	250 W	500 W	500 W	1,000 W
Electricity requirement	766 Wh	1,568 Wh	1,568 Wh	2,990 Wh
Generation Time	3.80 Hours	3.80 Hours	3.80 Hours	3.80 Hours
Sunless-day	2 Days	2 Days	2 Days	3 Days
Efficiency of PV System	85%	85%	85%	85%
Efficiency of Battery	85%	85%	85%	85%
Discharge Depth of Battery	80%	80%	80%	80%
Module short circuit current	250Wp 6.20A			
System voltage	12V	12V	12V	12V

- Module capacity
- Individual households

Installed capacity of solar PV system = $\frac{\text{Load}}{\text{Amt. of sunshine} \times \text{Efficiency}}$

= 766 Wh/Day

3.80 hr x 85%

= 237.2 [Wp]

Module capacity = 250[Wp] × 1[EA] = 250[Wp]

- Schools

Installed capacity of solar PV system = $\frac{\text{load}}{\text{time} \times \text{efficiency}}$ =

= 1,568 Wh/Day

3.80 hr x 85%

= 485.4[Wp]

Module capacity = 250[Wp] × 2[EA] = 500[Wp]

- Village community center

Installed capacity of solar PV system

$$= \frac{\text{load}}{(\text{time} \times \text{efficiency})} =$$

= 1,568 Wh/Day

3.80 hr x 85%

= 485.4[Wp]

Module capacity = 250[Wp] × 2[EA] = 500[Wp]

- Public health centers

Installed capacity of solar PV system

$$= \frac{\text{load}}{(\text{time} \times \text{efficiency})} =$$

= 2,990 Wh/Day

3.80 hr x 85%

= 925.7 [Wp]

Module capacity = 250[Wp] × 4[EA] = 1,000[Wp]

< Table 1.15> Design installed capacity (Solar module)

No	Project target	LC* (W)	IC-SPP* (WP)	IC-M (Wp)	Remark
1	Household	197	237.2	250	
2	School	542	485.4	500	
3	Village community center	542	485.4	500	
4	Public health center	312	925.7	1,000	

* LC: Load capacity; IC-SPP: Installed capacity of solar PV power system; IC-M: Installed capacity of solar module

- Controller capacity
 - Households (1-HD (household))

Input current: 6.20[A] × 1 × 1.25 = 7.75[A]

Output current: 197[W] ÷ 12Vdc = 16.416[A] × 1.25= 20.52[A]

Installed capacity of controller = 12V 20[A] × 1[EA]

Modelo: MPPT

- Schools

Input current: $6.20[A] \times 2 \times 1.25 = 15.50[A]$
 Output current: $542[W] \div 12V_{dc} = 45.16[A] \times 1.25 = 56.46 [A]$
 Installed capacity of controller = $12V\ 60[A] \times 1[EA]$
 Modelo: MPPT

- Village community center

Input current: $6.20[A] \times 2 \times 1.25 = 15.50[A]$
 Output current: $542[W] \div 12V_{dc} = 45.16[A] \times 1.25 = 56.46 [A]$
 Installed capacity of controller = $12V\ 60[A] \times 1[EA]$
 Modelo: MPPT

- Public health centers

Input current: $6.20[A] \times 4 \times 1.25 = 31.10[A]$
 Output current: $312[W] \div 12V_{dc} = 26.0[A] \times 1.25 = 32.5 [A]$
 Controller internal current : $1,000W / 12\ V = 83.3 [A]$
 Installed capacity of controller = $12V\ 80[A] \times 1[EA]$
 Modelo: MPPT

< Table 1.16> Design installed capacity (controller)

No	Project target	Input current (A)	Output current (A)	IC-C* (A)	Remark
1	Household	7.75	20.52	12V 20	
2	School	15.50	56.46	12V 60	
3	Village community center	15.50	56.46	12V 60	
4	Public health center	31.10	32.50	12V 80	

* IC-C: Installed capacity of controller

- Inverter capacity
- Households (1-HD*)

Load capacity: $197 [W] \times 1.25 = 246.25 [W]$

Installed capacity of inverter: $12V/110V\ 250\ W \times 1[EA]$

- Schools

Load capacity: $542 [W] \times 1.25 = 677.50 [W]$

Installed capacity of inverter: $12V/110V\ 700W \times 1[EA]$

- Village community centers

Load capacity: $542 \text{ [W]} \times 1.25 = 677.50 \text{ [W]}$

Installed capacity of inverter: 12V/110V 700 W $\times 1$ [EA]

- Public health centers

Load capacity: $312 \text{ [W]} \times 1.25 = 390 \text{ [W]}$

Installed capacity of inverter: 12V/110V 400 W $\times 1$ [EA]

< Table 1.17> Design installed capacity (Inverter)

No	Project target	LC* (VA)	IC-I* (W)	Remark
1	Household	246.25	12V 250	
2	School	677.50	12V 700	
3	Village community center	677.50	12V 700	
4	Public health center	390.00	12V 400	

* LC: Load capacity; IC-I: Installed capacity of inverter

- **Battery capacity**

- Households (1-HD)

$$\text{Minimum capacity} = \frac{(\text{Electricity requirement} \times \text{No. of sunless days})}{(\text{Battery loss rate} \times \text{Depth of discharge} \times \text{System volt})}$$

$$= 766 \text{ Wh} \times 2 \text{ days}$$

$$0.85 \times 0.80 \times 12\text{V}$$

$$= 187.74 \text{ Ah}$$

$$\text{Installed capacity} = 12\text{V}, 200 [\text{Ah}] = 1[\text{EA}]$$

Deep cycle battery: 80%

- Schools

$$\text{Minimum capacity} = \frac{(\text{Electricity requirement} \times \text{No. of sunless days})}{(\text{Battery loss rate} \times \text{Depth of discharge} \times \text{System volt})}$$

$$= 1,568 \text{ Wh} \times 2 \text{ days}$$

$$0.85 \times 0.80 \times 12\text{V}$$

$$= 384.31 \text{ Ah}$$

$$\text{Installed capacity} = 12\text{V}, 200 [\text{Ah}] \text{ 2 parallel} = 2 [\text{EA}]$$

Batería de ciclo profundo: 80%

- Village community centers

$$\text{Minimum capacity} = \frac{(\text{Electricity requirement} \times \text{No. of sunless days})}{(\text{Battery loss rate} \times \text{Depth of discharge} \times \text{System volt})}$$

$$= 1,568 \text{ Wh} \times 2 \text{ days}$$

$$0.85 \times 0.80 \times 12\text{V}$$

= 384.41 Ah

Installed capacity = 12V, 200 [Ah] 2 parallel = 2 [EA]

Deep cycle battery: 80%

- **Public health centers**

$$\text{Minimum capacity} = \frac{(\text{Electricity requirement} \times \text{No. of sunless days})}{(\text{Battery loss rate} \times \text{Depth of discharge} \times \text{System volt})}$$

= 2,990 Wh x 3 days

0.85 x 0.80 x 12V

= 1,099.26 Ah

Installed capacity = 12V 200[Ah] 5 Parallel = 5[EA]

Deep cycle battery: 80%

<Table 1.18> Design installed capacity (storage battery)

No	Project target	IC-BE* (Ah)	IC-B* (Ah)	Remark
1	Household	187.74	200	
2	School	384.31	400	
3	Village community center	384.31	400	
4	Public health center	1,099.26	1,000	

* IC-BE: Installed capacity of storage battery estimated herein; IC-B: Installed capacity of storage battery applied herein

The following table shows a summary of design installed capacities of all loads as addressed above:

< Table 1.19> Design installed capacity by load

No	Project target	M* (Wp)	C* (A)	I* (W)	B* (Ah)	Remark
1	Household	250 × 1EA	12V 20	12V 250	1 X 200	The inverters will be MPTT models and deep cycle batteries 80% of the gel type with a guarantee of more than 3 years.
2	School	250 × 2EA	12V 60	12V 700	2 x 200	
3	Village community center	250 × 2EA	12V 60	12V 700	2 x 200	
4	Public health center	250 × 4EA	12V 80	12V 400	5 x 200	

* M: Solar module; C: Controller; I: Inverter; B: Storage battery

< Table 1.20> Total amount of supply

No	Project target	Unit(EA)	M*(Wp)	C* (A)	I* (W)	B* (Ah)	Remark
1	Household	10,172	250	20.52	12V 250	200	The inverters will be MPPT models and deep cycle batteries 80% of the gel type with a guarantee of more than 3 years..
2	School	164	500	56.46	12V 700	400	
3	Village community center	164	500	56.46	12V 700	400	
4	Public health center	22	1,000	32.50	12V 400	1,000	

* M: Solar module; C: Controller; I: Inverter; B: Storage battery

b) System Configuration

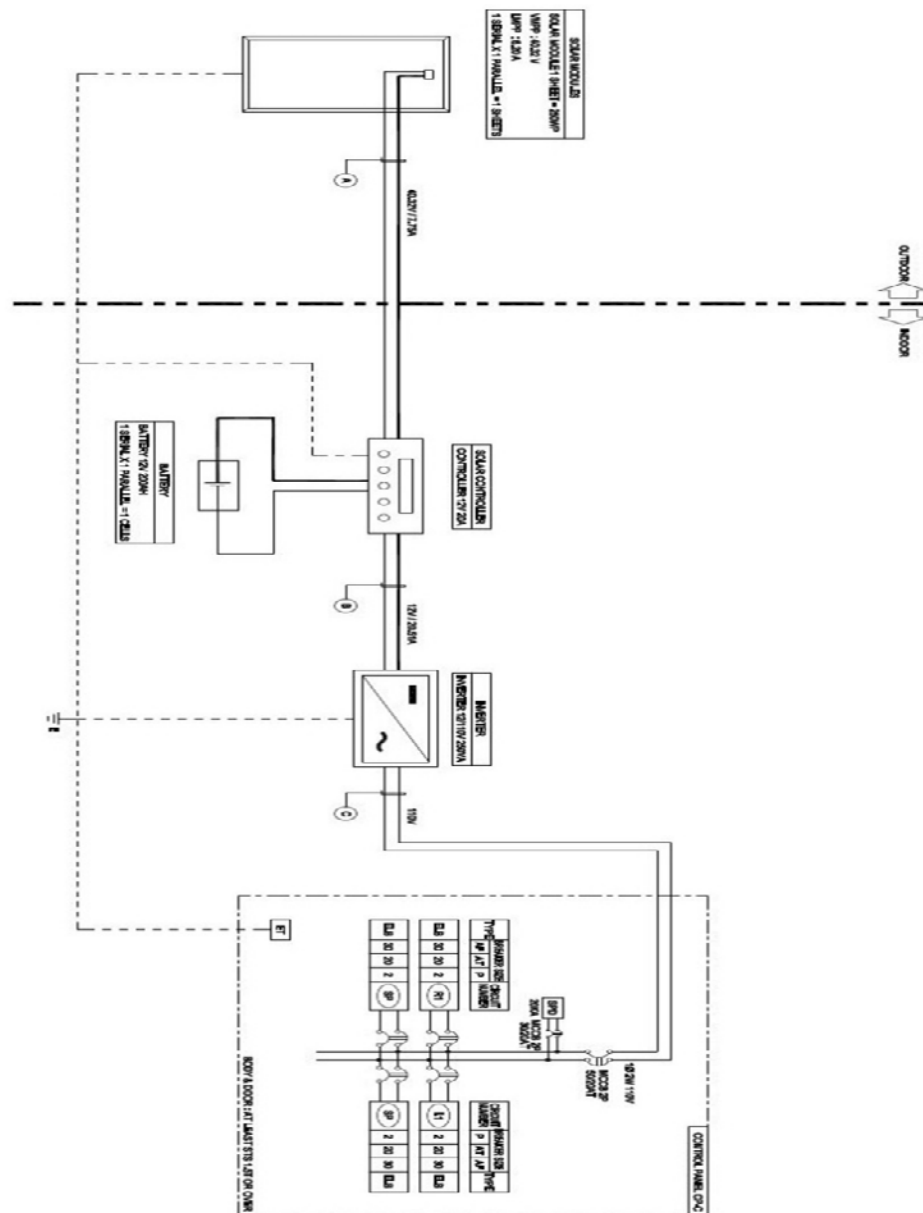
A distance among households in villages of mountainous areas where resident live is some 1m to 1,000m. They are distributed in the form of detached in target villages as shown in the following tables:

< Table 1.20> Number of project targets over 3 provinces

No	Provinces	Village	House	School	Community center	Health center
1	Dpto. Río San Juan	27	2,290	0	0	9
2	RACCS	76	6,782	148	128	13
3	RACCN	5	1,100	16	36	0
Total		108	10,172	164	164	22

c) System Configuration Diagram

- Individual households

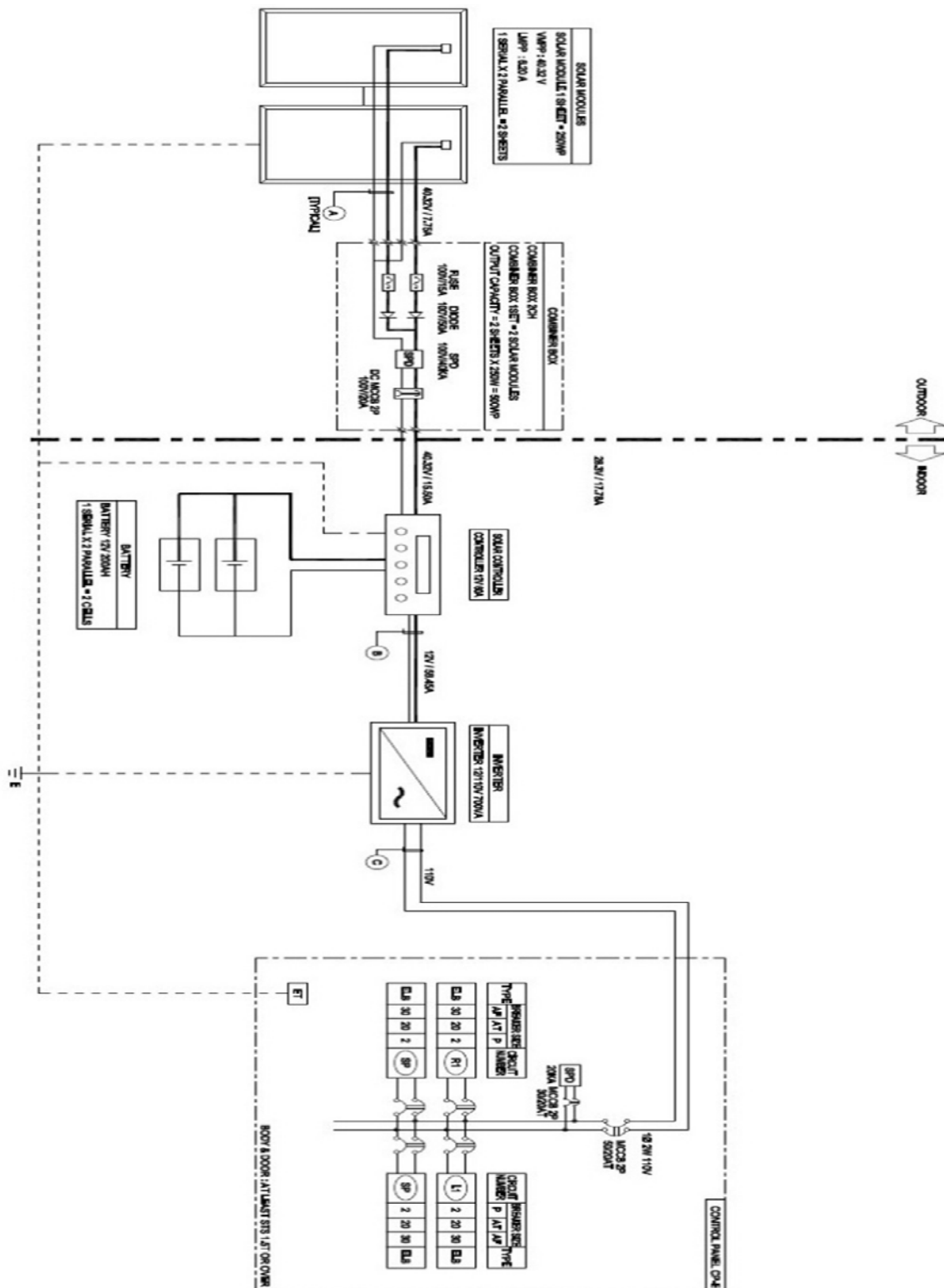


< Figure 1.10> System configuration diagram (individual households)

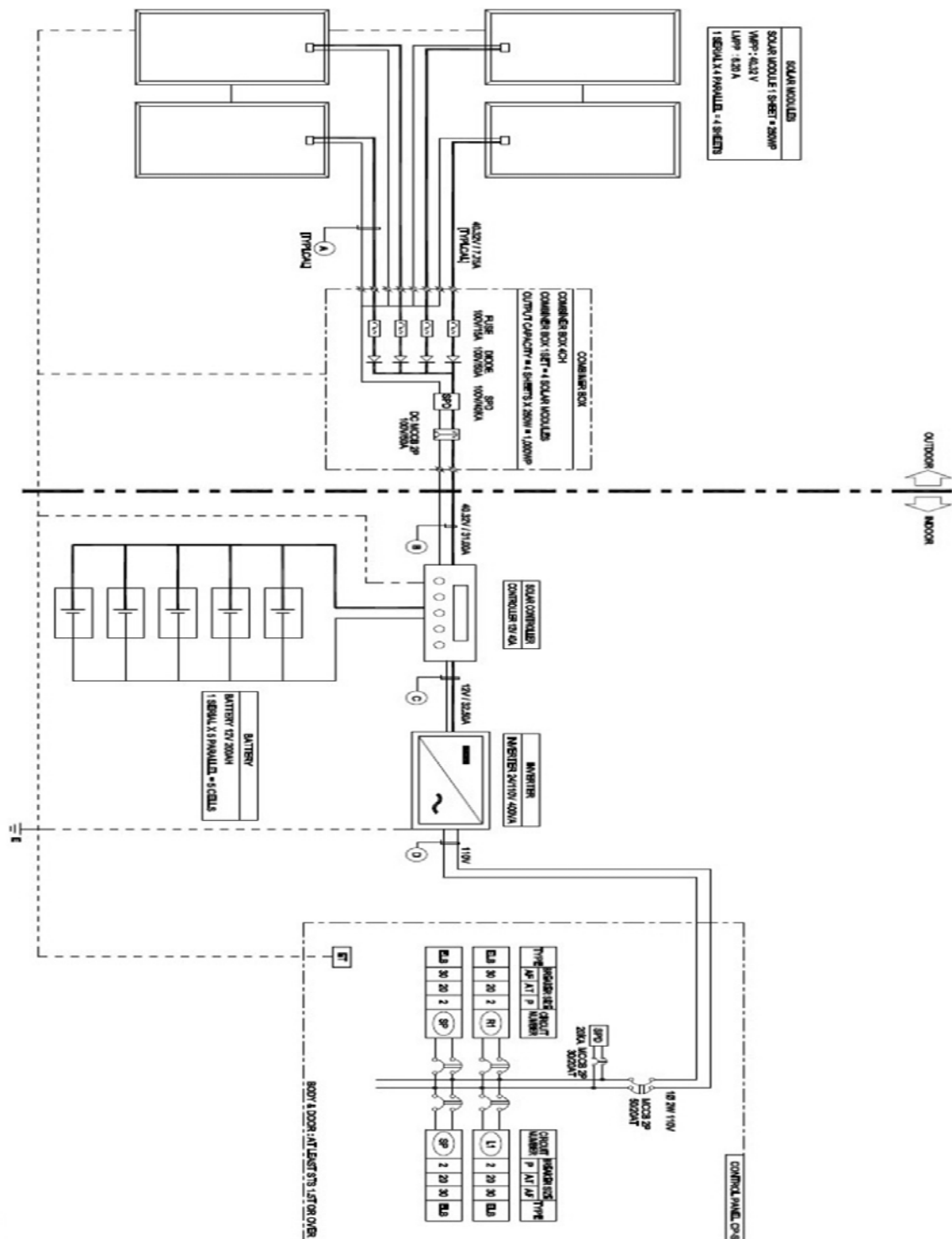
-
- The diagram illustrates a solar power system for a house with a garage. The system components and their connections are as follows:
- Solar Modules:** Two modules are shown, one labeled "SOLAR MODULE 18V/170W" and the other "SOLAR MODULE 20V/170W". They are connected to a "COMBINER BOX".
 - Combiner Box:** Labeled "COMBINER BOX", it receives input from the solar modules and outputs to a "CHARGE CONTROLLER".
 - Charge Controller:** Labeled "CHARGE CONTROLLER", it is connected to the combiner box and the battery bank.
 - Battery Bank:** Labeled "BATTERY 12V/100AH", it is connected to the charge controller and the inverter.
 - Inverter:** Labeled "INVERTER 12V/100W", it converts DC power from the battery bank into AC power for the loads.
 - Loads:** The system powers several loads:
 - A "TV" (100W) connected to the inverter output.
 - A "Stereo" (100W) connected to the inverter output.
 - A "100W Light" connected to the inverter output.
 - A "100W Light" connected to the inverter output.
 - A "100W Light" connected to the inverter output.
 - A "100W Light" connected to the inverter output.
 - Wiring and Safety:** The diagram includes various safety symbols and labels:
 - "GROUNDING" symbol at the bottom left.
 - "FUSE" symbol at the bottom center.
 - "CIRCUIT BREAKER" symbol at the bottom right.
 - "100W LIGHT" label at the bottom right.
 - "100W LIGHT" label at the bottom right.
 - "100W LIGHT" label at the bottom right.
 - "100W LIGHT" label at the bottom right.
 - "100W LIGHT" label at the bottom right.

< Figure 1.11> System configuration diagram (Schools)

- Village community center



Public health centers



< Figure 1.12> System configuration diagram (public health centers)

II. Technical Specification Requirements**2 Equipment Manufactured in Korea:****2.1 Electricity Equipment:****2.1.1 PV Modules**

No	Specification	Requirement	Bidder’s Submission
1	Origin	Korea	
2	Maximum Power	Higher than 250W or equal	
3	Efficiency	Higher than 15.5% or equal	
4	Cell type	Monocrystalline	
5	Warranty	More than 10 years	
6	Performance guarantee	More than 90% for 10 years, 80% for 25 years	
7	Certification	Bidder's Spec.	
8	Open Circuit Voltage (Voc)	Bidder's Spec.	
9	Short Circuit Current (Isc)	Bidder's Spec.	
10	Operating Voltage (Vmax)	Bidder's Spec.	
11	Operating Current (Imax)	Bidder's Spec.	
12	Maximum System Voltage	Less than 1000 V	
13	Temperature coefficient of Pmax	Bidder's Spec.	
14	Temperature coefficient of Voc	Bidder's Spec.	
15	Temperature coefficient of Isc	Bidder's Spec.	
16	NOCT	46 °C ±2%	
17	Operating Temperature	-25 °C ~ 80 °C	
18	Maximum Reverse Current	Less than 15A	
19	Size	Bidder's Spec.	
20	Weight	Bidder's Spec.	
21	Number of Cell	Bidder's Spec.	

22	Cable	More than 4 mm ²	
23	Junction Box	IP67 or higher	
24	Bypass Diode	Bidder's Spec.	
25	Material	Front : Tempered glass Back : Weatherproof film	
26	Frame	Aluminum	
27	Certification	Certified in Korea	

2.1.2 Solar Controller

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	System Voltage	12V	.
3	Output Frequency	60Hz ± 2%	
4	Rated Current	House : Higher than 20A School and community center : Higher than 60A Health center : Higher than 80A	
5	Control System	MPPT	
6	Maximum Input Voltage	Higher than 45V	
7	Maximum Battery Voltage	Higher than 30V	
8	Operating Temperature	-25 °C ~ 55 °C	
9	Degree of Protection	IP60 or higher	
10	Material	AL, IRON, PVC	.
11	Size	Bidder's Spec.	
12	Warranty	More than 3 years	
13	Certification	Certified in Korea	

2.1.3 Inverters

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	Rated Capacity	House : Higher than 250W or equal School and community center : Higher than 700W or equal Health center : Higher than 400W or equal	
3	System Voltage	12V	
4	Input Voltage Range	Bidder's Spec.	
5	Frequency	60Hz	
6	Output Voltage	110V	
7	Efficiency	More than 90%	
8	Operating Temperature	-25 °C ~ 55 °C	
9	Operating humidity	Less than 90%	
10	Cooling System	Bidder's Spec.	
11	Warranty	More than 3 years	
12	Certification	Certified in Korea	

2.1.4 Structure

No	Specification	Requirement	Bidder's Submission
1	Origin	-	
2	Structure Type	Fixed type	
3	Installation Angle	Facing south 17°	
4	Height	Higher than 1.7m / Higher than 1m (for Community Health Center)	
5	Material	Steel	
6	Coating	Hot dip galvanized	
7	Coating Thickness	Bidder's Spec.	

8	Wind Speed (Base)	Higher than 45m/s	
9	Wind Speed (Avg. Max)	Higher than 60m/s	
10	Wind Speed (Gust)	Higher than 70m/s	
11	Foundation type	Reinforced Concrete	
12	Foundation Strength	Higher than 210 kg/cm ²	

2.1.5 Combiner Box

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	Number of Input Circuits	2CH / 4CH	
3	Display Type	Analog	
4	Installation	Column Mount	
5	Enclosure Material	Stainless steel 304 or better	
6	Protection Degree	IP67 or higher	
7	Maximum System Voltage	1000V	
8	Maximum System Current	Bidder's Spec.	
9	Diode	Included	
10	Fuse Capacity	Higher than 15A (per Channel)	
11	Operating Temperature	-10℃ ~ 60℃	
12	Operating humidity	Less than 90%	
13	Warranty	More than 3 years	

2.1.6 Battery

No	Specification	Requirement	Bidder's Submission
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1	Origin	Korea	
2	Voltage	12V	
3	Capacity	200Ah	
4	Hour Rate (Hr)	10	
5	Plate Material	Lead	
6	Electrolyte	MF(Maintenance free) / Gel type	
7	Type	Deep cycle	
8	Cycle life characteristics	More than 950 cycle (in DOD 50% condition)	
9	Type of Electrode Plate	Clad type (CS) or paste type (HS)	
10	Type of Enclosure	Closed type	
11	Float Charging Voltage	Bidder's Spec.	
12	End of Discharge Voltage	Bidder's Spec.	
13	Size	Bidder's Spec.	
14	Material	Container : ABS/ Cover : Flameproof material	
15	Weight	Bidder Spec.	
16	Operating Temperature	-25 °C ~ 60 °C	
17	Terminal Type	Fastening by Bolt & nut	
18	Warranty	More than 3 years	

2.1.7 Battery Cabinet

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	

2		School and Community center : W770 x D710 x H500 or larger Health center : W770 x D710 x H660 or lager	
3	Type	Self-standing	
4	Material	Steel	
5	Coating	Powder Coating	
6	Color	Bidder's Spec.	

2.1.8 Distribution Board

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	Type	Wall mounting, exposed	
3	Number of Circuits	4 (1EA / 4EA)	
4	Breaker type	Main : Molded-case circuit breaker Branch : Earth leakage breaker	
5	Circuit Breaker Rating	Main : 50AF 30AT / Branch : 30AF 20AT	
6	Trip System	Thermal magnetic	
7	Number of Poles and Elements	2P2E	
8	Rated Breaking Current	5kA / 2.5kV	
9	Rated Voltage	110V	
10	Material	Flame Retardant Material	
11	Size	Bidder's Spec.	
12	Weight	Bidder's Spec.	

2.1.9 Lighting

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	

2	Rated Power	5W	
3	Rated Voltage	110V	
4	Frequency	60Hz	
5	Type	LED	
6	Luminous Flux	More than 700 lm	
7	Base	E26	
8	Light Source Color	Bidder's Spec.	

2.1.10 Lighting Fixture

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	Socket	E26 BASE	
3	Voltage	Higher than AC 110V	
4	Current	Higher than 5A	
5	Size	Bidder's Spec.	

2.1.11 Fence

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	Span	2M	
3	Height	Higher than 2M	
4	Width of Door	1M	
5	Material	Fence : Steel / Appurtenances : Stainless steel	
6	Coating	Powder Coating	
7	Color	Bidder's Spec.	
8	Base Type	Concrete 210 Kg/cm2	

2.1.12 Switch

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	Type	Single Pole Single Throw (1P1T)	
3	Material	Polycarbonate	
4	Size	Bidder's Spec.	
5	Color	Bidder's Spec.	
6	Voltage	Higher than 110V	
7	Current	Higher than 5V	
8	Switch Box	Exposed type	
9	Material (switch box)	PVC	
10	Size (switch box)	Bidder's Spec.	

2.1.13 Receptacle

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	Type	1 gang, Earthing type	
3	Rated Current	Higher than 15A	
4	Rated Voltage	Higher than 110V	
5	Plug Type	NEMA Type A	

2.1.14 Ground Rod

No	Specification	Requirement	Bidder's Submission
1	Origin	Korea	
2	Diameter	14Φ	
3	Length	1000mm	

4	Copper-rod Connector	Included	
5	Material	Steel	
6	Coating	Copper clad steel	
7	Coating Thickness	Bidder's Spec.	

2.2 Spare parts and maintenance toolboxes.

2.2.1 Mandatory spare parts:

The percentages considered are described below:

- 1) PV Module : 5%
- 2) AC/DC (Inverter) : 5%
- 3) Battery : 2%
- 4) Solar Controller : 5%
- 5) SPD : 2%
- 6) Lamp: 5%
- 7) Fuses : 5%
- 8) Breakers One Pole : 2%

III. Equipment and materials manufactured in Nicaragua:**3.1 Support : Nicaragua standard & See the design drawings****3.2 Solar power plant modules standard installation method****3.3 Technical requirements****3.3.1 Standards applied for the construction:**

All materials and equipment shall be new and shall be photovoltaic power plant in Nicaragua or Korea or manufactured under ISO standard or equivalent. If this is not possible, products manufactured to the relevant photovoltaic power plant shall be accepted by the customer's Engineer, Representative, subject to the Contractor providing detailed documentary evidence that the former conditions cannot be satisfied.

3.3.2 Construction material**3.3.2.1 Cement:**

Use concrete and building warrant for Nicaragua standard. Cement lot must be shipped or intensity control certificates. Any kind of cement should also be provided with prior approval and this supply not be changed without the consent of the Employer.

Cement must be kept dry and style used rotation. The bag containing the cement to be placed off the ground in a warehouse big enough fresh air, from rain, sun ... new cement production is hot right after 3 months of storage used. Do not use cement or produced more than 12 months or less than 12 months but has been reduced quality as lumpy, slow solidification, reduces the intensity.

3.3.2.2 Sand:

Applicable standard: Nicaragua standard

Provided sand must be taken from qualified sources and appropriate quantity according to work progress during the entire construction process, Source of sand to be used must be tested and the consent of the Employer.

3.3.2.3 Crushed stone:

Quality assurance in accordance with Nicaragua standard. Source of stone before using must be tested to meet the standard from Nicaragua and under the consent of the Employer.

3.3.2.4 Water used for mixing and maintenance of concrete and mortar:

Quality assurance in accordance with the Nicaragua standard. It is best to use water from public sources, adequate water tank size will ensure a stable supply capacity on the project; the water test should be carried out regularly during use. When you want to change the water supply, the Contractor shall report to the Owner of the experiment to document water from new sources to

satisfy the technical requirements and can only be used when there is a written agreement of the owner investment. The Contractor shall bear all costs including water supply reservoir when water is not enough.

3.3.2.5 Round bar steel:

Reinforcing steel used in reinforced concrete structures must be certified origin, quality certificates and test results Nicaragua standard. The reinforcement should be checked by Employer before using.

Reinforced before processing and before the concrete surface must be clean, free of dirt, grease, and no flakes of iron and rust layers. The rod squashed, reduced cross-section due to cleaning or other causes not exceed the limit of 2% of the diameter.

Before the reinforcement should be pulling, bending and straightening, bending cutting is done by mechanical methods.

Reinforcing steel shall be stored under a roof and put into heaps distinguished by number, diameter, length, and write code for convenience, not sorted confuse reinforcement corrosion and is not leaking. Reinforced case to be classified outside the first list of a high and a low head on a hard surface, no grass grows. Reinforced piles have higher statistical base at least 30 cm, do not put more than 1.2 m high and 2m wide. For cold steel must be stored in a closed, dry place.

3.3.2.6 Shaped steel

Steel must be fully certified origin, quality certificates and test results according to Nicaragua standard, Employer approval before being put in to use.

3.3.2.7 Bolts and nuts

Use the right type design.

The contractor should submit the certificate of origin and test report before using it.

3.3.2.8 Galvanized steels

Use the right type as in the design drawings.

The contractor should submit the certificate of origin and test report before using it.

Hot dipped galvanized steel must meet the Nicaragua standard with the thickness of the coating as follow:

No	Type of Material	Coating thickness(μm)
1	Details and structures with thickness	≥80
2	Bolts, nuts and rings	≥55

3.3.2.9 Structure and foundation

For underground concrete burial for installing a basis for the solar generation facilities, determine the installation of an anchor, the design and manufacturing, displayed the location of the foundation.

Concrete foundation : Each of the foundation that match the same height.

anchor & base plate: If height is not constant, cement mortar by correction by the position and length matches.

Steel and other: Installation angle of the module is shall not higher than 17 °


3.3.2.10 Materials

Circular Pipe should be materials that support the tensile force and pressure.

Use C-channel or angle for bracket such as attaching materials for solar cell

3.3.2.11 Foundation type review

<Table 1.21> Foundation type review

Sort	Individual footing	
General outline	Each column can independently supporting foundation	
Picture		

3.3.3 Technical requirements.

3.1. Excavation and backfilling.

The construction method shall be selected by the contractor with the consent of The Employer.

The method complies with construction method of Nicaragua standard. The dimensions are as in the drawings for each types of supports.

The backfilling can be executed after the concrete is mature.

3.2. Concrete Work:

1) Concrete mix design:

The Contractor shall submit to the tender the concrete mix design used in the work to get approval before using. Table design includes the following details:

- The type and source of cement;
- Type and source of aggregates;
- Chart grain of sand and rubble;
- The rate of water-cement by weight;
- The work specified for the concrete mix during the construction;

Composition of the concrete to satisfy quality requirements and label design rules, must have the appropriate time frozen to ensure the progress and cost of the most economical use of cement;

The examination of the strength of poured concrete must be conducted by testing a series of samples collected at the concreting and maintenance under conditions consistent with actual production conditions or the inspection of concrete strength at the scene, according to the Nicaragua standard. For roof structure, with a large aperture and high beams, the construction company must make detailed measures through the Employer to ensure certainty and safety of the strut system formwork scaffolding, avoid distortions in the process of pouring concrete.

2) Additives:

The contractor may propose up plastic additives and other additives but accepted by the Design Consultant. The additive composition Calcium chloride shall not be used in any situation. The Contractor shall submit before the instructions by the manufacturer of additives for printing design consultancy. Contractor shall use additives carefully purposes and dosage, the Contractor shall ensure that additives do not cause any side effects affect the strength, durability and longevity of concrete. The Contractor shall evaluate the benefits of the use of additives. Do not add any cost to the contract for the use and testing of additives.

The additive is put to use additives were State management agencies of Nicaragua standard Total salt content in concrete aggregates, water and additives shall not exceed the amount specified in the weight of cement concrete.

3) Concreting:

Concrete mixture must be compacted to achieve to the corners of formwork and around the reinforcement, ensure surface finishing and concrete strength requirements.

Work satisfies the above conditions are checked regularly by a dedicated test equipment for the slump under Nicaragua standard.

If the slump exceeds 2.5 mm compared with the requirements, it will not be used on the project.

4) Testing work:

The inspection and testing in the field or in the laboratory should be made under the supervision of the Engineer or authorized representative.

The test of cement and aggregates must be taken to ensure the required quality.

The sample of concrete shall comply with of Nicaragua standard.

The Contractor shall cooperate with laboratory work carried out quickly favorably, creating.

Favorable conditions for the laboratory to work in concrete mixing plant and engineer the tender exposed to laboratory experiments. Construction units will provide laboratory on site all equipment necessary to contain and preserve the concrete form according to the technical requirements.

All work and administration, transportation and maintenance of the samples conducted by laboratories.

Evaluation of the experiment: When the 7 days test result does not satisfied. Constructor can choose to replace concrete not reach that does not wait until the 28th day. If test results after 28 days is not reached, the concrete test samples will be removed and to lay the concrete. This work will not be carried out until the Engineer's license and in accordance with the process described above. If test results satisfactory, the constructor can proceed normally.

In terms of necessity, the constructor can specify the appropriate time for testing concrete strength. The strength of the concrete test was conducted with the approval of the Engineer. In the case of unsatisfactory test results, means that the concrete strength is not in accordance with the design requirements, the contractor is responsible for handling with their funds.

3.3. The painting:

Using the right paint colors and types in accordance with design documents.

The application of the product must comply with the requirements of the manufacturer, together with the shipment.

All surfaces to be painted components must be cleaned prior to construction.

Paint surface must be flat, ball, colors are not painted and passive measures from soiled cover, building warrant until handover. Need to take measures to shield the paint section has been completed in areas where many people go to work or other actions to avoid stains cling to other materials.

3.4. Other technical requirement

Solar Panel

- Plate shall protect PV module from the external impact, and not be of rust.

- PV module shall be installed towards the south, and always maintain the proper degree of angle.
- Module shall be installed with the proper distance from the plate, and fixed with the angle, bolt, nut and washer.

Solar panel support system

- Inspection window shall be installed on the solar panel support bar to monitor the function of solar panel.
- Solar panel support bar shall be made of rust-free material to cope with environmental change.
- The Contractor shall consider whether wire will be installed to protect solar panel and support bar from exterior environment such as rain, wind, etc.
- Electric wire from solar panel shall be laid under the ground with electric wire protector.
- Foundation of support bar shall fix solar panel and support bar steadily.

Inverter & Controller (System)

- Controller converts direct-current power (from solar cells) into DC (12V) Power.
- Inverter is used to convert direct-current power (from solar cells) into alternating current power (110V) and supply electricity for loads.
- The Contractor shall install A/C circuit breaker to protect inverter circuit.
- The Contractor shall install D/C circuit breaker to protect controller circuit.
- Inverter circuit shall be equipped with device which enables voltage and current to be maintained constantly for extending battery lifetime.
- Inverter circuit and controller circuit shall be all-in-one system (shall be protected from exterior impact).
- Inverter circuit and controller circuit shall be separately embedded at system panel for maintenance purpose.
- Exterior of all-in-one system (Include House system)
- Exterior of all-in-one system shall be equipped with rust-free material.
- System shall be placed in the safety cabinet in order to protect the system from the external impacts.
- Safety cabinet shall be designed considering the safety of users.

- Safety cabinet shall be designed considering the long-term use upon the environmental impact such as the humidity, the internal-external temperatures and so on.
- Display panel shall be equipped at the exterior of the system enabling users to check capacity of battery (V) and power consumption (W).
- Cigar socket shall be equipped at the exterior of the system.
- Inverter & controller system shall be approved by reputable institution for safety and reliability.
- Fan shall be installed to reduce temperature of the system.
- The fan shall be detachable for inner-cleaning purpose.
- Switches shall be installed at the exterior to control DC & AC circuit breaking and display.
- LED display panel shall be installed for DC & AC circuit breaking and operated condition.

System support stand

- The Contractor shall install system support stand for anti-theft and system management.
- The system support to be installed shall be rust-free.
- The system support shall be equipped with height adjustment device.
- The Contractor shall ensure space between system and battery for system O&M and battery maintenance.

Battery

- Lifetime of batteries shall be more than ten(10)years at normal condition.
- Batteries shall have optimal condition for PV power system and their charging shall be completed within four(4) hours.
- Battery shall be heat-free during charge and have no elution of solution.
- The Contractor shall use the batteries which is approved as suitable one for PV system by reputable institution.
- The Contractor shall install a cap at the battery terminal to prevent dust-in and moisture-in.

Protection Rack of System and Battery (for House system)

- Rack shall not be of rust.
- Rack shall be convenient for the installation, and have the height adjustable function.
- Rack shall be configured as a single rack in order to protect the system and the battery
- Rack shall maintain the enough spaces between the system and the upper part of battery to ensure the terminal connection and the operation & maintenance.

Installation of electric lamps

- In-house electric wires shall be installed with PVC Pipes.
- The Contactor shall install switches for each lamps.

Earthing

- All ground wire must be designed in accordance with the design.
- The earthing shall be tested before checking and handling
- Joints and the crossover point of the grounding grid to be welded in accordance with drawings.

Construction & Installation

- General
- The Contractor shall take fully responsible for installation and construction of :
- The concrete foundation for PV module.
- The protection house for power system
- The transmission system (AC 110V) from inverter to the households including: foundation, concrete poles, cabling, grounding with a completed system.
- All-in-one PV equipment system including Inverter, Controller, Converter, Battery (for household)
- Manufacturing and supply of all-in-one PV equipment system including Inverter, Controller, Converter along with rack type equipment for storage of battery (for School & Community village & Public health center)
- All-in-one PV equipment equipped with ventilation fans for heat dissipation. The fans shall be easily separated for maintenance purpose.

-
- All-in-one PV equipment equipped with display panel providing the information as below; AC power consumption, Battery charging condition, Battery charging voltage
 - Installation (Equipments, system connection, wiring, grounding etc.)
 - PV module supports, PV modules, battery storage cabinets, charging unit, inverters, battery, connection box... and other auxiliary parts to the load independent households.
 - Base, MCCB and completed spare parts.
 - Installation of in-house load system (breaker, socket, LED lamp, cabling)
 - Standards applied for the construction
 - All materials and equipment shall be new and shall be manufactured in Korea or Nicaragua or under ISO standard or equivalent. If this is not possible, products manufactured to the relevant photovoltaic power plant shall be accepted by the the Employer.

House structure plan

- Capacity: 250Wp × 1EA = 250Wp

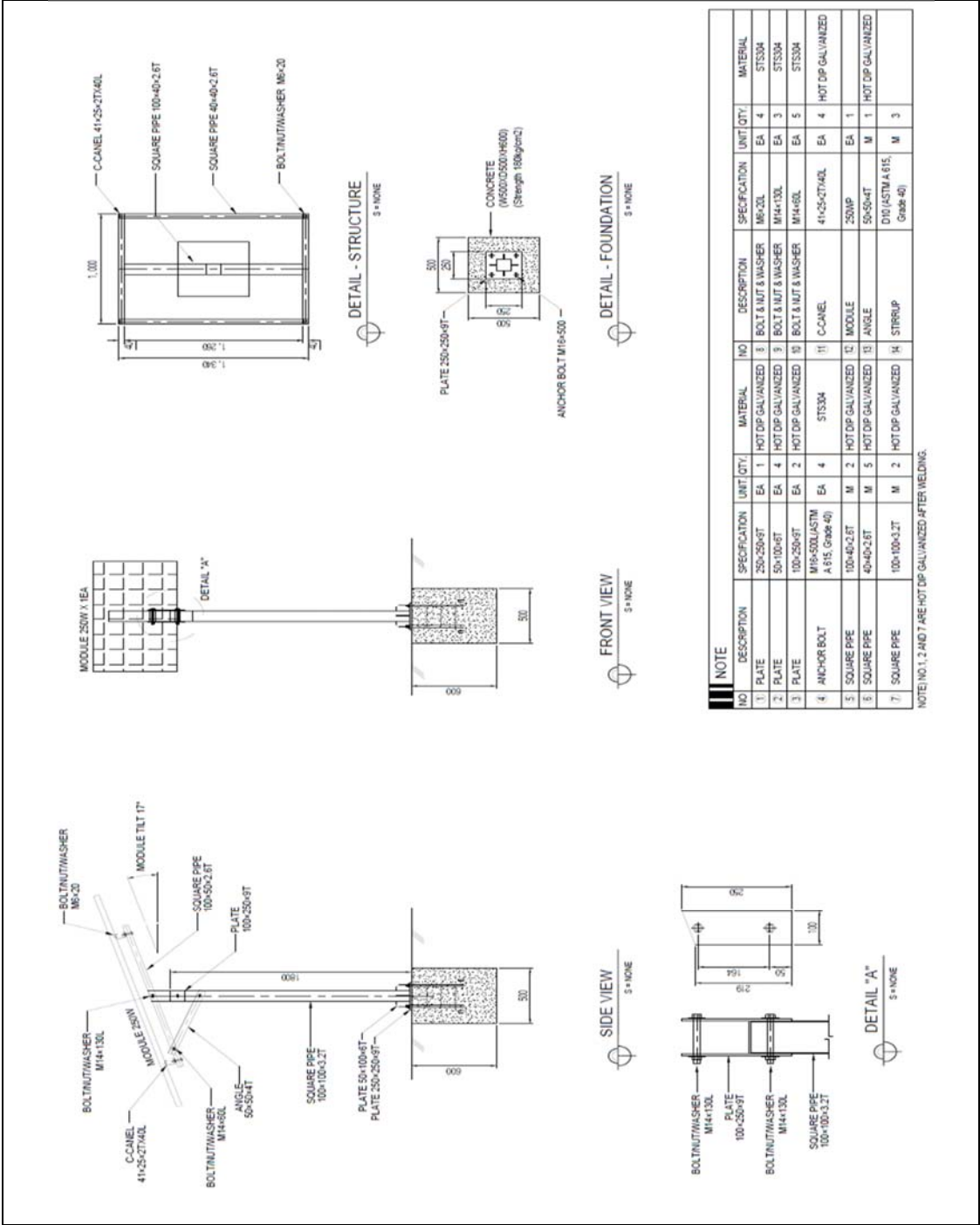


Fig. System Structure plan (Individual households)

School and community center structure plan

- Capacity: $250Wp \times 2EA = 50$

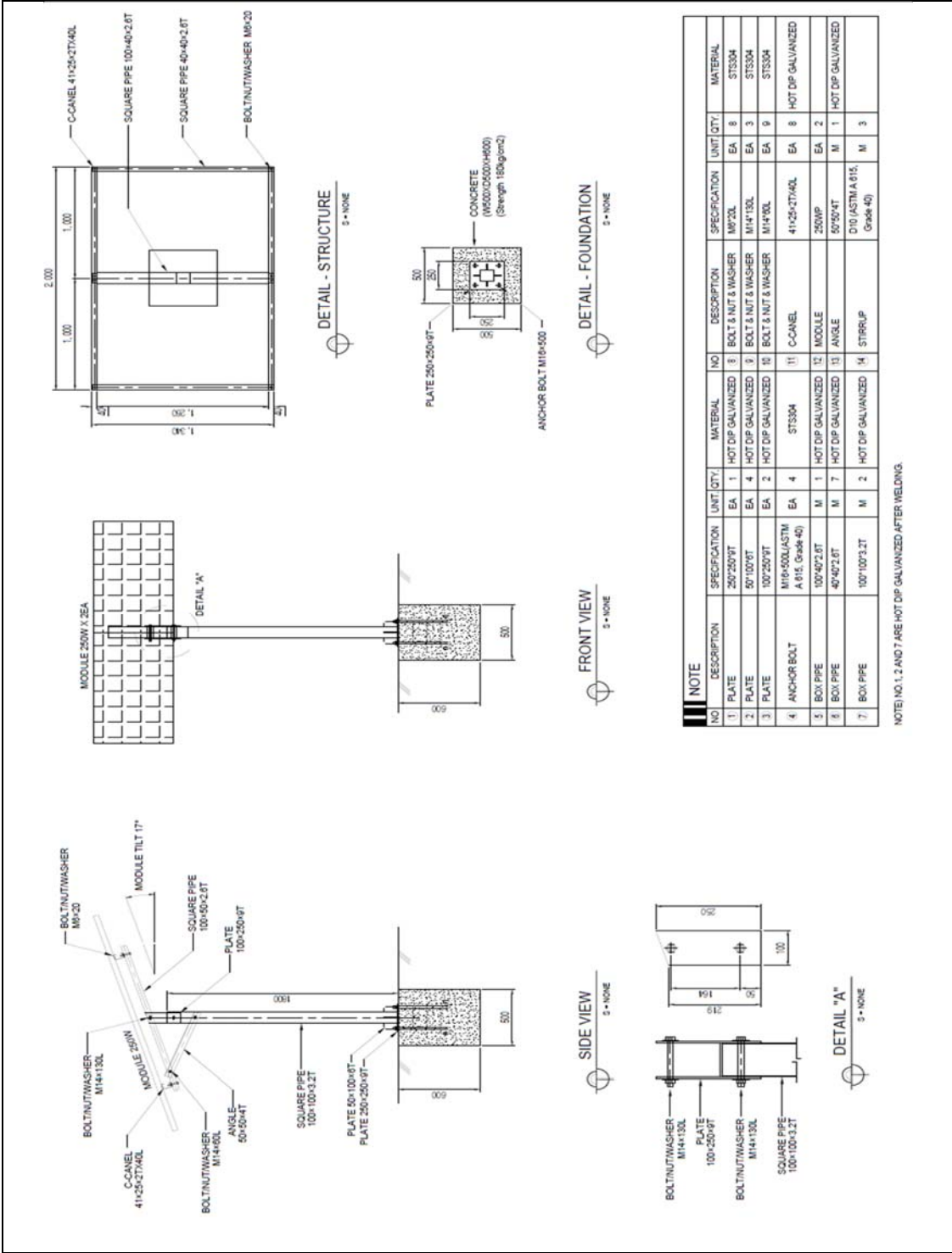
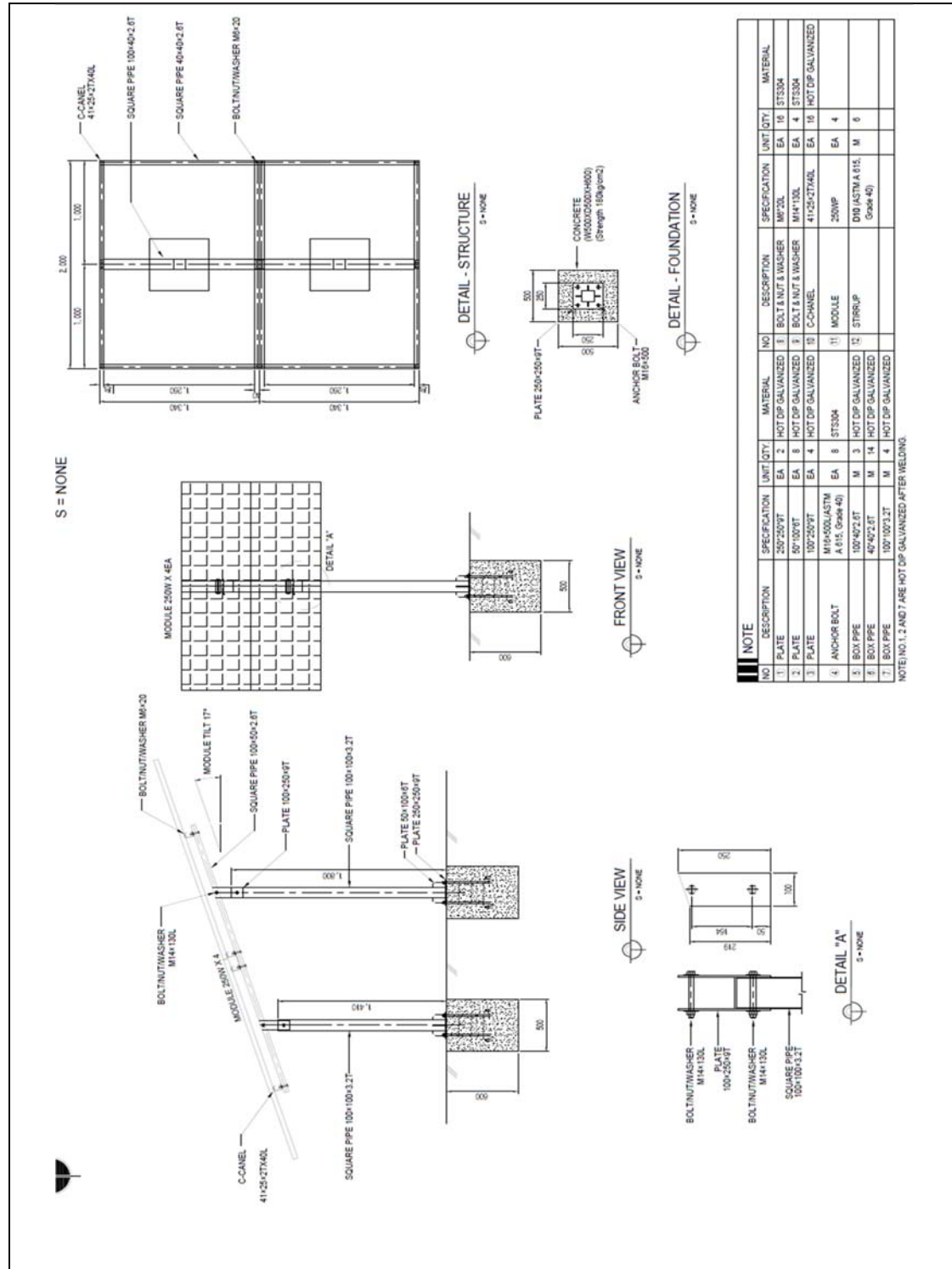


Fig. System Structure plan (School & Village Community Center)

Health center structure plan

- Capacity: $250\text{Wp} \times 4\text{EA} = 1,000\text{Wp}$



IV. The transportation of the Equipment and materials:**4.1. For Equipment manufactured in Korea:**

For main Equipment: final destination is to project sites for installation

4.2. For Equipment manufactured in Nicaragua

The transportation means are by truck to the main sites, then to the different project points by manual or other suitable transportation means.

- All the Equipment should be covered with risk insurance by the Contractor during the transportation from the suppliers to the project sites.
- The rainy season is between the months of July and October, even though is not so intense, should be considered for transportation and installation of equipment.

V. Checking of the Equipment and materials

Within two weeks, the Contractor shall submit Employers records and certificates of all tests were conducted on the materials and equipment, complete information including code, label, etc.

The tests open the shipment and the equipment provided by the contractor must be done in the field. The Contractor shall be responsible for appointing its representative to the scene to attend the tests and bear the costs of these employees.

After the test is carried out, the two sides will sign a written receipt. If in the event the equipment is damaged, or not in comply with the standards specified in the contract, or does not correspond to the quality standard has been pointed out in these tests, the Employers have the right to required for replacement or repair from the Contractor.

The Contractor shall submit copies of the test certificates and inspection of manufacturers for all types of materials and equipment are provided.

If after inspection or testing equipment, it is confirmed that equipment or components are defective or do not comply with the technical specifications, operational requirements, the Employer has the right to reject equipment or components mentioned above and shall notify the appropriate period for contractors to know basis, the reason for the rejection. All costs for the re-inspection shall be paid by the Contractor. When Employer acceptance of the test material will be notified in writing to the Contractor.

The acceptance test results, monitoring by Employers given on the provision of materials and equipment in the contract does not mean that will release the Contractor from the binding offer. For major Equipment manufactured from Korea, if necessary, the Employer will organize an inspection to check the manufacturer's capacity as well as the quality of Equipment before importing to for installation. These costs will be paid by the contractor.

VI. Site organization**6.1 Site receipt.**

After receiving the contract award notification, the contractor appointed technical staff to the Employer to take over the work surface and mark the field, the axis position and the scope of works, can record signed by regulations. The milestone was marked, preserved and painted concrete.

Contractor contact with the local authorities concerning to the permission to use the local public transport as well as coordinate the work of maintaining security and order in the area of construction.

6.2 Signal of construction:

The site is surrounded by a fence, the Contractor shall arrange security, the entrance sign installation works have recorded information about the project. The size and content of signs must be agreed by Employers and construction supervision.

The temporary works on the layout with construction such as: protection; executive steering committee and the health service; toilet scene was cleared daily to ensure sanitary standards; core processing factory steel formwork; Repository cement; storage of supplies and equipment; concrete mixing plant, construction of water tanks; dump material is arranged in accordance with the time of construction and ground conditions; electric system for construction.

6.3 Water supply of construction:

The Contractor shall contact the Owner to ensure clean water for construction. Build a small tank for construction.

6.4 Prepare materials and Equipment/machinery for construction:

The preparation of materials for construction. The machinery equipment such as excavators, bulldozers, piling, concrete mixers, cranes along with other equipment into selected works are kind of appropriate capacity and features, quality good quality, ensure safety and sanitation.

VII. Measures to reduce the environmental impact of the construction process.

Impact	Measures to minimize the impact
Noise, smell,	<ul style="list-style-type: none"> - The maximum noise level allowed to the Nicaragua or Korea standard
Waste and dust	<ul style="list-style-type: none"> - Air quality and dust must be improved through measures to reduce dust in compliance with Nicaragua standard to residential areas. - Must use the appropriate equipment to avoid transporting overload. Muds, materials, waste gas, oil spillage from equipment have been removed immediately. - Must minimize dust, waste at the construction site and any inconvenience affecting the community through the management and strict supervision. - It is necessary to spray water in the streets nearby construction sites to minimize dust. - Must be maintained roads, clean streets, no mud, dirt, spills and waste arising from the construction activities. <p>The Contractor shall immediately handle, remove the supplies, materials or liquids cause odors to people living near the project</p>
Waste handling and treatment	<ul style="list-style-type: none"> - The type of household solid waste and must be collected from commercial construction sites and transported to a garbage dump set. - The dug or dredged material will be removed from the construction site to the other area selected by the contractor, provided that the material is not contaminated. Any type of material, contaminated materials is moved to the specified location. <p>Do not leave any waste more than 24hours.</p>
Public & private Property	<ul style="list-style-type: none"> - The Contractor shall not damage public or private property during construction. The Contractor shall indemnify the property owner for any damage unless the damage is unavoidable due to the permanent works. - The Contractor shall not damage or affect the public service unless the agency has agreed to allow a temporary arrangement construction.
Health and safety	<ul style="list-style-type: none"> - The Contractor shall provide the equipment, tools and protective clothing for workers and ensure the application of measures for safety.

	<ul style="list-style-type: none"> - Workers on the construction site must be provided facilities for bathing, washing cleaning during and after working hours. - Make available layouts clean water and first aid to clean and treat cuts and wounds. - The Contractor shall comply with national regulations on health and safety when using the measures to stabilize and shore was selected for excavation work. - Use dust protection for workers.
Transportation and traffic	<p>All work done to avoid an unnecessary impact on the public roads and alleys in the works, property. The width of the vehicles and equipment of the contractor shall not exceed one-half the width of any roads.</p> <ul style="list-style-type: none"> - The Contractor shall select transportation routes, choice of vehicle weight and load distribution to the shipping entering and leaving the site no damage to the road works, traffic demand - The Contractor shall be responsible for any damage to the road works and traffic demand.
Relations with the community	<ul style="list-style-type: none"> - The construction measures at each project site must be agreed priory between the contractor, the Department of Environmental Resources and supervision consultants. The Contractor shall also submit documents explaining methods of construction supervision consultants, Employers and the Department of Environmental Resources. Construction measures at each location will be agreed, allowing through presentation, discussion of documents explaining the construction measures at a meeting with the participation of representatives of the contractor, the Employer and supervisor. - At the request of the Employer or environmental and natural resource department, documents explaining construction methods will be explained and discussed in a meeting with people or with their representative.

VIII. Detail construction method.**8.1 Testing**

The inspection and testing at site or in the laboratory should be made under the supervision of the Employer or his authorized representative. Contractors conduct a full range of test items during construction in accordance with the power and construction industries. After conducting testing, contractor must prepare a record.

The tested items meet the standard requirements are basis to proceed with the next activities. The test items include:

- a) Testing the construction items.
- b) Testing the electricity items

8.2 The work of clearing, clean-up after construction:

After construction, the clean-up must be conducted every day. Cleanup work covers all construction equipment, waste material, concrete formwork and other materials surrounding. The material cannot be used to burn off or remove the spot in order to not to cause discomfort or local people.

All the machinery, the material must be moved outside the construction site before testing. The clean-up must be completed 03 days prior to formal acceptance test and the approval of the Employer.

IX. Testing and handover:

The Contractor must prepare a complete handover documents before acceptance, such as: technical test records, test records, daily logs, defect liability records.

X. Operation and Maintenance Support

The significance of operation and maintenance (“O&M”) of the Project to ensure its long-term sustainability is high. Contractor shall provide O&M support of technical assistance and training for Employer subsidiaries and local staff’s capacity building to operate, financially manage and maintain the installed solar plant systems for 1 year after the completion and shall get the approval of Employer for the appropriateness of capacity development plan.

1. Capacity Development for Operation and Maintenance Support**1.1 Capacity development for Employer and key solar stakeholders.**

The Contractor will carry out the capacity development component of the project including but not limited to the following tasks:

- (i) Identify key solar stakeholders and beneficiaries for the capacity development plans
- (ii) Develop and implement a capacity development plan for Employer and key solar stakeholders and beneficiaries and government financial and technical agencies on solar power development and off grid operation (stand-alone operation). Capacity development activities shall cover technical, project management, and operation and maintenance including but not limited to the following themes and topics:

1) Technical/Technological

- i. Solar energy technologies including photovoltaic, concentrating solar power, integrated solar combined cycle, and distributed solar energy.
- ii. Grid integration, and off grid operation (stand-alone operation)
- iii. Solar energy research and development trends

2) Project Management and Supervision

- i. Project design
- ii. Construction and Installation
- iii. Project management
- iv. Project implementation
- v. Operation and maintenance

- vi. Overhaul/repowering
- vii. Risk management and mitigation

1.2 Capacity development for Employer or subsidiaries

In addition to the above, the Contractor shall develop and implement a capacity development plan for Employer and its relevant subsidiaries to enhance capacity in solar plant construction and installation, project management and supervision, operation and maintenance, procurement, off grid operation of solar plants, project design and other project specific topics.

1.3 Capacity development modalities.

The capacity development plans and specific programs under the plans shall use all of the following implementation modalities, approaches, and tools in different combinations:

- (i) Seminar workshops including customized case studies
- (ii) Hands-on training and laboratory work; software development
- (iii) Field work and on-the job training
- (iv) Training trainers
- (v) Development of manuals, handbooks, and procedures

1.4 Expected minimum capacity development deliverables.

Using a combination of the modalities described in paragraph 1.3 and themes provided in paragraphs 1.1 and 1.2, the minimum outputs of the capacity development plans shall include:

- (i) At least five (5) capacity development training and seminars for at least **50** Employer staff and experts including customized case studies
- (ii) At least ten (**10**) solar capacity development activities (training and workshops) for at least **50** participants from 10 solar energy stakeholders

2. Qualification Requirements of the Firm

2.1 International Key Experts

1) Operation & Maintenance (O&M) Engineer.

The O&M Engineer should have a bachelor or higher degree in engineering and preferably 5 years of relevant experience in O&M of solar PV power plants. Previous experience in developing countries in the region is desirable. The Engineer will assess Employer’s capacity in PV O&M and recommend capacity building measures as appropriate. The Engineer will also advise maintenance and spares holding strategy. The Engineer will undertake the following:

- (i) Assess solar PV power plant O&M capacity and skills level in Employer and recommend necessary capacity building measures to meet the needs. Capacity building options to be considered shall include (a) specialist training by the solar PV equipment suppliers and electrical control suppliers, (b) need for contractor’s specialist staff to provide on the ground and/or remote advisory services, and (c) non-equipment specific O&M training to be provided to Employer.
- (ii) Based on actual market, geographic conditions and power plant strategy, recommend appropriate O&M activities to be carried out by Employer staff and if any activities should be outsourced;
- (iii) Propose a spares holding strategy;
- (iv) Identify the various maintenance options and recommend the optimal approach;
- (v) Advise on procurement options for training services. Where appropriate, include such scope in the Bidding Document for the EPC contract; and
- (vi) Provide trainings, workshops and seminars for the operational personnel to build O&M capacity and ensure smooth operation;
- (vii) Ensure training of client counterpart staff through on-the-job training and classroom training programs;
- (viii) Ensure adequacy of operation and maintenance manuals
- (ix) According to area of expertise, provide inputs to the capacity development plan and act as resource person/trainer/facilitator in the development of Nicaragua on solar energy.
- (x) Lead the updating and enforcement of the operation and maintenance (O&M) manuals

2) Capacity Development Expert/Program Manager.

The Capacity Building expert should have a bachelor or higher degree in engineering and preferably 5 years of relevant experience in training, capacity development, and continuing education, preferably with 3 years experience in managing technical training centers. Previous experience in developing countries in the region is desirable. The

expert shall provide overall supervision and management of the implementation of the capacity development component. The expert will lead the refinement of the capacity development plans, organize the various topics and tools to ensure the most efficient program for building institutional capacity. Lead in the organization of experts and resource persons, including targeted training programs for highly technical topics. The Program Manager will coordinate with other capacity development programs under Employer. The Expert will ensure that each capacity development plan and program is implemented efficiently. The Expert will develop the criteria and questionnaire and lead in the monitoring and evaluation of the effectiveness of the capacity development component.

2.2. National Key Experts

1) Training Coordinator.

The Training coordinator should have a bachelor or higher degree in Engineering or Education preferably with experience in organizing capacity development programs and in managing training centers. The coordinator will lead the day today implementation of the capacity development program under the guidance of the international Capacity Development Expert/Program Manager. The coordinator shall assist in the administration, logistics, scheduling and arrangements related to the training programs. The coordinator must be proficient in both English and Spanish languages.

2.3. The expected inputs from the Firm are shown in the following tables

Team Employer		Person-Months
International	O&M engineer	12
	Capacity Development Expert/Program Manager.	8
National	Training Coordinator	12

XI. Services and Facilities provided by the Contractor

During the contract period until the completion of the Project, the following Services and Facilities will be provided by the Contractor Team:

1. Fully functioning Office (including IT hardware & telephones, furniture and office supplies).
2. For other requirements like furnishing of office equipment, furniture, and miscellaneous expenses.
3. Living facilities for its key staff, service vehicle(s) inclusive of drivers for carrying out the services under the prevailing rules and regulations of the Government through the Civil Works contract.

Forms and Procedures

Form of Completion Certificate

Date: _____

Loan/Credit N°: _____

RFB N°: _____

To: _____

Dear Ladies and/or Gentlemen,

Pursuant to GCC Clause 24 (Completion of the Facilities) of the General Conditions of the Contract entered into between yourselves and the Employer dated _____, relating to the _____, we hereby notify you that the following part(s) of the Facilities was (were) complete on the date specified below, and that, in accordance with the terms of the Contract, the Employer hereby takes over the said part(s) of the Facilities, together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the Facilities or part thereof: _____
2. Date of Completion: _____

However, you are required to complete the outstanding items listed in the attachment hereto as soon as practicable.

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Title

(Project Manager)

Form of Operational Acceptance Certificate

Date: _____

Loan/Credit N°: _____

RFB N°: _____

To: _____

Dear Ladies and/or Gentlemen,

Pursuant to GCC Sub-Clause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Employer dated _____, relating to the _____, we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below.

1. Description of the Facilities or part thereof: _____
2. Date of Operational Acceptance: _____

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Title

(Project Manager)

Change Order Procedure and Forms

Date: _____

Loan/Credit N°: _____

RFB N°: _____

CONTENTS

1. General
2. Change Order Log
3. References for Changes

ANNEXES

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| Annex 2 | Estimate for Change Proposal |
| Annex 3 | Acceptance of Estimate |
| Annex 4 | Change Proposal |
| Annex 5 | Change Order |
| Annex 6 | Pending Agreement Change Order |
| Annex 7 | Application for Change Proposal |

Change Order Procedure

1. General

This section provides samples of procedures and forms for implementing changes in the Facilities during the performance of the Contract in accordance with GCC Clause 39 (Change in the Facilities) of the General Conditions.

2. Change Order Log

The Contractor shall keep an up-to-date Change Order Log to show the current status of Requests for Change and Changes authorized or pending, as Annex 8. Entries of the Changes in the Change Order Log shall be made to ensure that the log is up-to-date. The Contractor shall attach a copy of the current Change Order Log in the monthly progress report to be submitted to the Employer.

3. References for Changes

- (1) Request for Change as referred to in GCC Clause 39 shall be serially numbered CR-X-nnn.
- (2) Estimate for Change Proposal as referred to in GCC Clause 39 shall be serially numbered CN-X-nnn.
- (3) Acceptance of Estimate as referred to in GCC Clause 39 shall be serially numbered CA-X-nnn.
- (4) Change Proposal as referred to in GCC Clause 39 shall be serially numbered CP-X-nnn.
- (5) Change Order as referred to in GCC Clause 39 shall be serially numbered CO-X-nnn.

Note: (a) Requests for Change issued from the Employer's Home Office and the Site representatives of the Employer shall have the following respective references:

Home Office	CR-H-nnn
Site	CR-S-nnn

- (b) The above number "nnn" is the same for Request for Change, Estimate for Change Proposal, Acceptance of Estimate, Change Proposal and Change Order.

Annex 1. Request for Change Proposal

(Employer’s Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

With reference to the captioned Contract, you are requested to prepare and submit a Change Proposal for the Change noted below in accordance with the following instructions within _____ days of the date of this letter _____.

1. Title of Change: _____
2. Change Request No. _____
3. Originator of Change: Employer: _____
Contractor (by Application for Change Proposal No. _____¹¹:
4. Brief Description of Change: _____
5. Facilities and/or Item No. of equipment related to the requested Change: _____
6. Reference drawings and/or technical documents for the request of Change:

<u>Drawing No./Document No.</u>	<u>Description</u>
---------------------------------	--------------------
7. Detailed conditions or special requirements on the requested Change: _____

8. General Terms and Conditions:

- (a) Please submit your estimate to us showing what effect the requested Change will have on the Contract Price.
- (b) Your estimate shall include your claim for the additional time, if any, for completion of the requested Change.
- (c) If you have any opinion negative to the adoption of the requested Change in connection with the conformability to the other provisions of the Contract or the safety of the Plant or Facilities, please inform us of your opinion in your proposal of revised provisions.
- (d) Any increase or decrease in the work of the Contractor relating to the services of its personnel shall be calculated.
- (e) You shall not proceed with the execution of the work for the requested Change until we have accepted and confirmed the amount and nature in writing.

(Employer's Name)

(Signature)

(Name of signatory)

(Title of signatory)

Annex 2. Estimate for Change Proposal

(Contractor’s Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

With reference to your Request for Change Proposal, we are pleased to notify you of the approximate cost of preparing the below-referenced Change Proposal in accordance with GCC Sub-Clause 39.2.1 of the General Conditions. We acknowledge that your agreement to the cost of preparing the Change Proposal, in accordance with GCC Sub-Clause 39.2.2, is required before estimating the cost for change work.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Brief Description of Change: _____
4. Scheduled Impact of Change: _____
5. Cost for Preparation of Change Proposal: _____¹²

(a) Engineering		(Amount)
(i) Engineer	_____ hrs x _____ rate/hr =	_____
(ii) Draftsperson	_____ hrs x _____ rate/hr =	_____
Sub-total	_____ hrs	_____
Total Engineering Cost		_____
(b) Other Cost		_____

¹² Costs shall be in the currencies of the Contract.

Total Cost (a) + (b) _____

(Contractor’s Name)

(Signature)

(Name of signatory)

(Title of signatory)

Annex 3. Acceptance of Estimate

(Employer’s Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We hereby accept your Estimate for Change Proposal and agree that you should proceed with the preparation of the Change Proposal.

1. Title of Change: _____
2. Change Request No./Rev.: _____
3. Estimate for Change Proposal No./Rev.: _____
4. Acceptance of Estimate No./Rev.: _____
5. Brief Description of Change: _____
6. Other Terms and Conditions: In the event that we decide not to order the Change accepted, you shall be entitled to compensation for the cost of preparation of Change Proposal described in your Estimate for Change Proposal mentioned in para. 3 above in accordance with GCC Clause 39 of the General Conditions.

(Employer's Name)

(Signature)

(Name and Title of signatory)

Annex 4. Change Proposal

(Contractor’s Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

In response to your Request for Change Proposal No. _____, we
hereby submit our proposal as follows:

1. Title of Change: _____
2. Change Proposal No./Rev.: _____
3. Originator of Change: Employer: [_____
 Contractor: _____
4. Brief Description of Change: _____
5. Reasons for Change: _____
6. Facilities and/or Item No. of Equipment related to the requested Change:

7. Reference drawings and/or technical documents for the requested Change:

<u>Drawing/Document No.</u>	<u>Description</u>
-----------------------------	--------------------
8. Estimate of increase/decrease to the Contract Price resulting from Change Proposal:¹³

(Amount)

¹³ Costs shall be in the currencies of the Contract.

- (a) Direct material _____
- (b) Major construction equipment _____
- (c) Direct field labor (Total _____ hrs) _____
- (d) Subcontracts _____
- (e) Indirect material and labor _____
- (f) Site supervision _____
- (g) Head office technical staff salaries

Process engineer	_____ hrs @ _____ rate/hr	_____
Project engineer	_____ hrs @ _____ rate/hr	_____
Equipment engineer	_____ hrs @ _____ rate/hr	_____
Procurement	_____ hrs @ _____ rate/hr	_____
Draftsperson	_____ hrs @ _____ rate/hr	_____
Total	_____ hrs	_____

- (h) Extraordinary costs (computer, travel, etc.) _____
- (i) Fee for general administration, _____ % of Items _____
- (j) Taxes and customs duties _____
- Total lump sum cost of Change Proposal _____
- (Sum of items (a) to (j))*
- Cost to prepare Estimate for Change Proposal _____
- (Amount payable if Change is not accepted)*

9. Additional time for Completion required due to Change Proposal
10. Effect on the Functional Guarantees
11. Effect on the other terms and conditions of the Contract
12. Validity of this Proposal: within [Number] days after receipt of this Proposal by the Employer
13. Other terms and conditions of this Change Proposal:

- (a) You are requested to notify us of your acceptance, comments or rejection of this detailed Change Proposal within _____ days from your receipt of this Proposal.
- (b) The amount of any increase and/or decrease shall be taken into account in the adjustment of the Contract Price.
- (c) Contractor’s cost for preparation of this Change Proposal:²

(Contractor’s Name)

(Signature)

(Name of signatory)

(Title of signatory)

² Specify where necessary.

Annex 5. Change Order

(Employer's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We approve the Change Order for the work specified in the Change Proposal (No. _____), and agree to adjust the Contract Price, Time for Completion and/or other conditions of the Contract in accordance with GCC Clause 39 of the General Conditions.

1. Title of Change: _____

2. Change Request No./Rev.: _____

3. Change Order No./Rev.: _____

4. Originator of Change: Employer: _____

Contractor: _____

5. Authorized Price:

Ref. No.: _____

Date: _____

Foreign currency portion _____ plus Local currency portion _____

6. Adjustment of Time for Completion

None Increase _____ days

Decrease _____ days

7. Other effects, if any

Authorized by: _____

Date: _____

(Employer)

Accepted by: _____

Date: _____

(Contractor)

Annex 6. Pending Agreement Change Order

(Employer's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: / _____

Dear Ladies and/or Gentlemen:

We instruct you to carry out the work in the Change Order detailed below in accordance with GCC Clause 39 of the General Conditions.

1. Title of Change: _____
 2. Employer's Request for Change Proposal No./Rev.:
_____ dated: _____
 3. Contractor's Change Proposal No./Rev.: _____ dated:

 4. Brief Description of Change: _____
 5. Facilities and/or Item No. of equipment related to the requested Change:

 6. Reference Drawings and/or technical documents for the requested Change:

<u>Drawing/Document No.</u>	<u>Description</u>
 7. Adjustment of Time for Completion:
 8. Other change in the Contract terms:
 9. Other terms and conditions:
-
- _____

(Employer’s Name)

(Signature)

(Name of signatory)

(Title of signatory)

Annex 7. Application for Change Proposal

(Contractor's Letterhead)

To: _____

Date: _____

Attention: _____

Contract Name: _____

Contract Number: _____

Dear Ladies and/or Gentlemen:

We hereby propose that the below-mentioned work be treated as a Change in the Facilities.

1. Title of Change: _____
2. Application for Change Proposal No./Rev.: _____ dated:

3. Brief Description of Change: _____
4. Reasons for Change:
5. Order of Magnitude Estimation (in the currencies of the Contract):
6. Scheduled Impact of Change:
7. Effect on Functional Guarantees, if any:

8. Appendix:

(Contractor’s Name)

(Signature)

(Name of signatory)

(Title of signatory)

Drawings

GENERAL DRAWING LIST	
No.	TITLE
GENERAL	
E-001	DRAWING LIST
E-002	SYMBOL & LEGEND
[SINGLE HOUSEHOLD]	
E-101	PV SYSTEM CONFIGURATION [SINGLE HOUSEHOLD]- TYPE "A"
E-102	MAIN ELECTRICAL LINE MAP [SINGLE HOUSEHOLD] -TYPE "A"
E-103	ELECTRICAL POWER & LINGTING PLAN [SINGLE HOUSEHOLD]- TYPE "A"
E-104	PV MODULE DETAIL [SINGLE HOUSEHOLD]-TYPE "A"
E-105	STRUCTURE DETAIL [SINGLE HOUSEHOLD]- TYPE "A"
E-106	INVERTER DETAIL [SINGLE HOUSEHOLD]-TYPE "A"
E-107	CONTROLLER DETAIL [SINGLE HOUSEHOLD] -TYPE "A"
E-108	ELECTRIC BOX DETAIL [SINGLE HOUSEHOLD] - TYPE "A"
[SCHOOL, VILLAGE COMMUNITY CENTER]	
E-201	PV SYSTEM CONFIGURATION [SCHOOL, VILLAGE COMMUNITY CENTER]-TYPE "B"
E-202	MAIN ELECTRICAL LINE MAP [SCHOOL, VILLAGE COMMUNITY CENTER] - TYPE "B"
E-203	ELECTRICAL POWER & LINGTING PLAN [SCHOOL, VILLAGE COMMUNITY CENTER] - TYPE "B"
E-204	PV MODULE DETAIL [SCHOOL, VILLAGE COMMUNITY CENTER]- TYPE "B"
E-205	STRUCTURE DETAIL [SCHOOL, VILLAGE COMMUNITY CENTER]- TYPE "B"
E-206	INVERTER DETAIL [SCHOOL, VILLAGE COMMUNITY CENTER]- TYPE "B"
E-207	CONTROLLER DETAIL [SCHOOL, VILLAGE COMMUNITY CENTER]- TYPE "B"
E-208	ELECTRIC BOX DETAIL [SCHOOL,VILLAGE COMMUNITY CENTER]- TYPE "B"
[PUBLIC HEALTH CENTER]	

E-401	PV SYSTEM CONFIGURATION [PUBLIC HEALTH CENTER]- TYPE "D"
E-402	MAIN ELECTRICAL LINE MAP [PUBLIC HEALTH CENTER] - TYPE "D"
E-403	ELECTRICAL POWER & LINGTING PLAN [PUBLIC HEALTH CENTER]-TYPE "D"
E-404	PV MODULE DETAIL [PUBLIC HEALTH CENTER] -TYPE "D"
E-405	STRUCTURE DETAIL [PUBLIC HEALTH CENTER] -TYPE "D"
E-406	INVERTER DETAIL [PUBLIC HEALTH CENTER] -TYPE "D"
E-407	CONTROLLER DETAIL [PUBLIC HEALTH CENTER] -TYPE "D"
E-408	ELECTRIC BOX DETAIL [PUBLIC HEALTH CENTER]-TYPE "D"
E-409	FENCE INSTALLATION PLAN [PUBLIC HEALTH CENTER] -TYPE "D"
E-410	FENCE INSTALLATION DETAIL [PUBLIC HEALTH CENTER] -TYPE "D"
E-411	FENCE DOOR INSTALLATION DETAIL [PUBLIC HEALTH CENTER]-TYPE "D"

Supplementary Information

PART 3 – Conditions of Contract and Contract Forms

Section VIII - General Conditions of Contract

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General Conditions of Contract

A. Contract and Interpretation

1. Definitions

1.1 The following words and expressions shall have the meanings hereby assigned to them:

“Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments thereto).

“GCC” means the General Conditions of Contract hereof.

“PCC” means the Particular Conditions of Contract.

“day” means calendar day.

“year” means 365 days.

“month” means calendar month.

“Party” means the Employer or the Contractor, as the context requires, and “Parties” means both of them.

“Employer” means the person **named as such in the PCC** and includes the legal successors or permitted assigns of the Employer.

“Project Manager” means the person appointed by the Employer in the manner provided in GCC Sub-Clause 17.1 (Project Manager) hereof and **named as such in the PCC** to perform the duties delegated by the Employer.

“Contractor” means the person(s) whose Bid to perform the Contract has been accepted by the Employer and is named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

“Contractor’s Representative” means any person nominated by the Contractor and approved by the Employer in the manner provided in

GCC Sub-Clause 17.2 (Contractor's Representative and Construction Manager) hereof to perform the duties delegated by the Contractor.

"Construction Manager" means the person appointed by the Contractor's Representative in the manner provided in GCC Sub-Clause 17.2.4.

"Subcontractor," including manufacturers, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

"Dispute Board" (DB) means the person or persons named as such in the PCC appointed by agreement between the Employer and the Contractor to make a decision with respect to any dispute or difference between the Employer and the Contractor referred to him or her by the Parties pursuant to GCC Sub-Clause 46.1 (Dispute Board) hereof.

"The Bank" means the financing institution **named in the PCC**.

"Contract Price" means the sum specified in Article 2.1 (Contract Price) of the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

"Facilities" means the Plant to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract.

"Plant" means permanent plant, equipment, machinery, apparatus, materials, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor under GCC Sub-Clause 7.3 hereof), but does not include Contractor's Equipment.

"Installation Services" means all those services ancillary to the supply of the Plant for the Facilities, to be provided by the Contractor under the Contract, such as transportation and provision of marine or other similar insurance, inspection, expediting, site preparation works (including the provision and use of Contractor's Equipment and the supply of all construction materials required), installation, testing, precommissioning, commissioning, operations, maintenance, the

provision of operations and maintenance manuals, training, etc... as the case may require.

“Contractor’s Equipment” means all facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant, or other things intended to form or forming part of the Facilities.

“Country of Origin” means the countries and territories eligible under the rules of the Bank as further **elaborated in the PCC**.

“Site” means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site.

“Effective Date” means the date of fulfillment of all conditions stated in Article 3 (Effective Date) of the Contract Agreement, from which the Time for Completion shall be counted.

“Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, as referred to in GCC Clause 8 and in accordance with the relevant provisions of the Contract.

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been completed operationally and structurally and put in a tight and clean condition, that all work in respect of Precommissioning of the Facilities or such specific part thereof has been completed, and that the Facilities or specific part thereof are ready for Commissioning as provided in GCC Clause 24 (Completion) hereof.

“Precommissioning” means the testing, checking and other requirements specified in the Employer’s Requirements that are to be carried out by the Contractor in preparation for Commissioning as provided in GCC Clause 24 (Completion) hereof.

“Commissioning” means operation of the Facilities or any part thereof by the Contractor following Completion, which operation is to be carried out by the Contractor as provided in GCC Sub-Clause 25.1 (Commissioning) hereof, for the purpose of carrying out Guarantee Test(s).

“Guarantee Test(s)” means the test(s) specified in the Employer’s Requirements to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, in accordance with the provisions of GCC Sub-Clause 25.2 (Guarantee Test) hereof.

“Operational Acceptance” means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor’s fulfillment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of GCC Clause 28 (Functional Guarantees) hereof and shall include deemed acceptance in accordance with GCC Clause 25 (Commissioning and Operational Acceptance) hereof.

“Defect Liability Period” means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in GCC Clause 27 (Defect Liability) hereof.

2. Contract Documents

2.1 Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.

3. Interpretation

3.1 In the Contract, except where the context requires otherwise:

- (a) words indicating one gender include all genders;
- (b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- (c) provisions including the word “agree,” “agreed,” or “agreement” require the agreement to be recorded in writing;
- (d) the word “tender” is synonymous with “Bid,” “tenderer,” with “Bidder,” and “tender documents” with “Bidding Document,” and
- (e) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

3.2 Incoterms

Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of Parties thereunder shall be as prescribed by *Incoterms*.

Incoterms means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1^{er}, 75008 Paris, France.

3.3 Entire Agreement

Subject to GCC Sub-Clause 16.4 hereof, the Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of Parties with respect thereto made prior to the date of Contract.

3.4 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each Party hereto.

3.5 Independent Contractor

The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the Parties hereto. Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Employer.

3.6 Non-Waiver

3.6.1 Subject to GCC Sub-Clause 3.6.2 below, no relaxation, forbearance, delay or indulgence by either Party in enforcing

any of the terms and conditions of the Contract or the granting of time by either Party to the other shall prejudice, affect or restrict the rights of that Party under the Contract, nor shall any waiver by either Party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.6.2 Any waiver of a Party's rights, powers or remedies under the Contract must be in writing, must be dated and signed by an authorized representative of the Party granting such waiver, and must specify the right and the extent to which it is being waived.

3.7 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

3.8 Country of Origin

"Origin" means the place where the plant and component parts thereof are mined, grown, produced or manufactured, and from which the services are provided. Plant components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

4. **Communica- tions**

4.1 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) in writing and delivered against receipt; and
- (b) delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Agreement.

When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Project Manager, a copy shall be sent to the Project Manager or the other Party, as the case may be.

- 5. Law and Language**
- 5.1 The Contract shall be governed by and interpreted in accordance with laws of the country **specified in the PCC**.
- 5.2 The ruling language of the Contract shall be that **stated in the PCC**.
- 5.3 The language for communications shall be the ruling language unless otherwise **stated in the PCC**.
- 6. Fraud and Corruption**
- 6.1. If the Employer determines, based on reasonable evidence, that the Contractor has engaged in corrupt, fraudulent, collusive or coercive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contract and expel him from the Site, and the provisions of Clause 15 shall apply as if such termination had been made under Sub-Clause 15.2 [Termination by Employer].
- Should any employee of the Contractor be determined, based on reasonable evidence, to have engaged in corrupt, fraudulent or coercive practice during the execution of the work then that employee shall be removed in accordance with Sub-Clause 6.9 [Contractor's Personnel].
- For the purposes of this Sub-Clause:
- (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;¹
 - (ii) "fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;²
 - (iii) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose,

¹ "Another party" refers to a public official acting in relation to the procurement process or contract execution]. In this context, "public official" includes EDCF staff and employees of other organizations taking or reviewing procurement decisions.

² "Party" refers to a public official; the terms "benefit" and "obligation" relate to the procurement process or contract execution; and the "act or omission" is intended to influence the procurement process or contract execution.

including to influence improperly the actions of another party;³

- (iv) “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;⁴

- (v) “obstructive practice” is

- (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or

- (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under Sub-Clause 1.15 [Inspections and Audits by the Bank].

B. Subject Matter of Contract

³ “Parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

⁴ “Party” refers to a participant in the procurement process or contract execution.

- 7. Scope of Facilities**
- 7.1 Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Precommissioning and delivery) of the Plant, and the installation, completion and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Employer's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labor, materials, equipment, spare parts (as specified in GCC Sub-Clause 7.3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works and services that will be provided or performed by the Employer, as set forth in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer.
- 7.2 The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.
- 7.3 In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period **specified in the PCC** and the provisions, if any, **specified in the PCC**. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedule No. 6, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefor and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.

8. Time for Commencement and Completion

- 8.1 The Contractor shall commence work on the Facilities within the period **specified in the PCC** and without prejudice to GCC Sub-Clause 26.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in the Appendix to the Contract Agreement titled Time Schedule.
- 8.2 The Contractor shall attain Completion of the Facilities or of a part where a separate time for Completion of such part is specified in the Contract, within the time **stated in the PCC** or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.

9. Contractor's Responsibilities

- 9.1 The Contractor shall design, manufacture including associated purchases and/or subcontracting, install and complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.
- 9.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities including any data as to boring tests provided by the Employer, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site if access thereto was available and of other data readily available to it relating to the Facilities as of the date twenty-eight (28) days prior to Bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities.
- 9.3 The Contractor shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which such authorities or undertakings require the Contractor to obtain in its name and which are necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Employer under GCC Sub-Clause 10.3 hereof and that are necessary for the performance of the Contract.

- 9.4 The Contractor shall comply with all laws in force in the country where the Facilities are to be implemented. The laws will include all local, state, national or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to GCC Sub-Clause 10.1 hereof.
- 9.5 Any Plant and Installation Services that will be incorporated in or be required for the Facilities and other supplies shall have their origin as specified under GCC Clause 1 (Country of Origin). Any subcontractors retained by the Contractor shall be from a country as specified in GCC Clause 1 (Country of Origin).
- 9.6 If the Contractor is a joint venture, or association (JV) of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfillment of the provisions of the Contract, and shall designate one of such persons to act as a leader with authority to bind the JV. The composition or the constitution of the JV shall not be altered without the prior consent of the Employer.
- 9.7 Pursuant to paragraph 2.2 e. of Appendix B to the General Conditions the Contractor shall permit and shall cause its subcontractors and subconsultants to permit, the Bank and/or persons appointed by the Bank to inspect the Site and/or the accounts and records relating to the procurement process, selection and/or contract execution , and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Contractor's and its Subcontractors' and subconsultants' attention is drawn to Sub-Clause 6.1 which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).
- 9.8 The Contractor shall conform to the sustainable procurement contractual provisions, if and as specified in the PCC.

**10. Employer's
Responsibilities**

- 10.1 All information and/or data to be supplied by the Employer as described in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, shall be deemed to be accurate, except when the Employer expressly states otherwise.

- 10.2 The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in that Appendix.
- 10.3 The Employer shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which (a) such authorities or undertakings require the Employer to obtain in the Employer's name, (b) are necessary for the execution of the Contract, including those required for the performance by both the Contractor and the Employer of their respective obligations under the Contract, and (c) are specified in the Appendix (Scope of Works and Supply by the Employer).
- 10.4 If requested by the Contractor, the Employer shall use its best endeavors to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.
- 10.5 Unless otherwise specified in the Contract or agreed upon by the Employer and the Contractor, the Employer shall provide sufficient, properly qualified operating and maintenance personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities; and shall perform all work and services of whatsoever nature, including those required by the Contractor to properly carry out Precommissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, at or before the time specified in the program furnished by the Contractor under GCC Sub-Clause 18.2 hereof and in the manner thereupon specified or as otherwise agreed upon by the Employer and the Contractor.
- 10.6 The Employer shall be responsible for the continued operation of the Facilities after Completion, in accordance with GCC Sub-Clause

24.8, and shall be responsible for facilitating the Guarantee Test(s) for the Facilities, in accordance with GCC Sub-Clause 25.2.

- 10.7 All costs and expenses involved in the performance of the obligations under this GCC Clause 10 shall be the responsibility of the Employer, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GCC Sub-Clause 25.2.
- 10.8 In the event that the Employer shall be in breach of any of his obligations under this Clause, the additional cost incurred by the Contractor in consequence thereof shall be determined by the Project Manager and added to the Contract Price.

C. Payment

11. Contract Price

- 11.1 The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.
- 11.2 Unless an adjustment clause is **provided for in the PCC**, the Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
- 11.3 Subject to GCC Sub-Clauses 9.2, 10.1 and 35 hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

12. Terms of Payment

- 12.1 The Contract Price shall be paid as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement and in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which also outlines the procedures to be followed in making application for and processing payments.
- 12.2 No payment made by the Employer herein shall be deemed to constitute acceptance by the Employer of the Facilities or any part(s) thereof.
- 12.3 In the event that the Employer fails to make any payment by its respective due date or within the period set forth in the Contract, the Employer shall pay to the Contractor interest on the amount of

such delayed payment at the rate(s) shown in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, for the period of delay until payment has been made in full, whether before or after judgment or arbitration award.

- 12.4 The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's Bid.

13. Securities

13.1 Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.

13.2 Advance Payment Security

13.2.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the Appendix to the Contract Agreement titled Terms and Procedures of Payment, and in the same currency or currencies.

13.2.2 The security shall be in the form provided in the Bidding documents or in another form acceptable to the Employer. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Employer. The security shall be returned to the Contractor immediately after its expiration.

13.3 Performance Security

13.3.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security for the due performance of the Contract in the amount **specified in the PCC**.

13.3.2 The Performance Security shall be denominated in the currency or currencies of the Contract, or in a freely

convertible currency acceptable to the Employer, and shall be in the form provided in Section X, Contract Forms, corresponding to the type of bank guarantee stipulated by the Employer in the PCC, or in another form acceptable to the Employer.

13.3.3 Unless otherwise specified in the PCC, the security shall be reduced by half on the date of the Operational Acceptance. The Security shall become null and void, or shall be reduced pro rata to the Contract Price of a part of the Facilities for which a separate Time for Completion is provided, five hundred and forty (540) days after Completion of the Facilities or three hundred and sixty five (365) days after Operational Acceptance of the Facilities, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GCC Sub-Clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GCC Sub-Clause 27.10, is liable for an extended defect liability obligation, the Performance Security shall be extended for the period specified in the PCC pursuant to GCC Sub-Clause 27.10 and up to the amount specified in the PCC.

13.3.4 The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract. The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

14. Taxes and Duties

14.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located.

14.2 Notwithstanding GCC Sub-Clause 14.1 above, the Employer shall bear and promptly pay

- (a) all customs and import duties for the Plant specified in Price Schedule No. 1; and
 - (b) other domestic taxes such as, sales tax and value added tax (VAT) on the Plant specified in Price Schedules No. 1 and No. 2 and that is to be incorporated into the Facilities, and on the finished goods, imposed by the law of the country where the Site is located.
- 14.3 If any tax exemptions, reductions, allowances or privileges may be available to the Contractor in the country where the Site is located, the Employer shall use its best endeavors to enable the Contractor to benefit from any such tax savings to the maximum allowable extent.
- 14.4 For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date twenty-eight (28) days prior to the date of Bid submission in the country where the Site is located (hereinafter called "Tax" in this GCC Sub-Clause 14.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of Contract, which was or will be assessed on the Contractor, Subcontractors or their employees in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction therefrom, as the case may be, in accordance with GCC Clause 36 hereof.

D. Intellectual Property

15. License/Use of Technical Information

- 15.1 For the operation and maintenance of the Plant, the Contractor hereby grants a non-exclusive and non-transferable license (without the right to sub-license) to the Employer under the patents, utility models or other industrial property rights owned by the Contractor or by a third Party from whom the Contractor has received the right to grant licenses thereunder, and shall also grant to the Employer a non-exclusive and non-transferable right (without the right to sub-license) to use the know-how and other technical information disclosed to the Employer under the Contract. Nothing contained herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how or other

intellectual property right from the Contractor or any third Party to the Employer.

- 15.2 The copyright in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third Party, including suppliers of materials, the copyright in such materials shall remain vested in such third Party.

16. Confidential Information

- 16.1 The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other Party hereto, divulge to any third Party any documents, data or other information furnished directly or indirectly by the other Party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this GCC Clause 16.
- 16.2 The Employer shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the Employer for any purpose other than the design, procurement of Plant, construction or such other work and services as are required for the performance of the Contract.
- 16.3 The obligation of a Party under GCC Sub-Clauses 16.1 and 16.2 above, however, shall not apply to that information which
- (a) now or hereafter enters the public domain through no fault of that Party
 - (b) can be proven to have been possessed by that Party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other Party hereto

- (c) otherwise lawfully becomes available to that Party from a third Party that has no obligation of confidentiality.

16.4 The above provisions of this GCC Clause 16 shall not in any way modify any undertaking of confidentiality given by either of the Parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.

16.5 The provisions of this GCC Clause 16 shall survive termination, for whatever reason, of the Contract.

E. Execution of the Facilities

17. Representatives

17.1 Project Manager

If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the Facilities. Such appointment shall only take effect upon receipt of such notice by the Contractor. The Project Manager shall represent and act for the Employer at all times during the performance of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.

All notices, instructions, information and other communications given by the Contractor to the Employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.

17.2 Contractor's Representative & Construction Manager

17.2.1 If the Contractor's Representative is not named in the Contract, then within fourteen (14) days of the Effective Date, the Contractor shall appoint the Contractor's Representative and shall request the Employer in writing to approve the person so appointed. If the Employer makes no objection to the appointment within fourteen

(14) days, the Contractor's Representative shall be deemed to have been approved. If the Employer objects to the appointment within fourteen (14) days giving the reason therefor, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GCC Sub-Clause 17.2.1 shall apply thereto.

17.2.2 The Contractor's Representative shall represent and act for the Contractor at all times during the performance of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract.

All notices, instructions, information and all other communications given by the Employer or the Project Manager to the Contractor under the Contract shall be given to the Contractor's Representative or, in its absence, its deputy, except as herein otherwise provided.

The Contractor shall not revoke the appointment of the Contractor's Representative without the Employer's prior written consent, which shall not be unreasonably withheld. If the Employer consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in GCC Sub-Clause 17.2.1.

17.2.3 The Contractor's Representative may, subject to the approval of the Employer which shall not be unreasonably withheld, at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Employer and the Project Manager.

Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GCC Sub-Clause 17.2.3 shall be deemed to be an act or exercise by the Contractor's Representative.

17.2.4 From the commencement of installation of the Facilities at the Site until Completion, the Contractor's Representative shall appoint a

suitable person as the Construction Manager. The Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as the Construction Manager's deputy.

17.2.5 The Employer may by notice to the Contractor object to any representative or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of the Employer, may behave inappropriately, may be incompetent or negligent, or may commit a serious breach of the Site regulations provided under GCC Sub-Clause 22.4. The Employer shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.

17.2.6 If any representative or person employed by the Contractor is removed in accordance with GCC Sub-Clause 17.2.5, the Contractor shall, where required, promptly appoint a replacement.

18. Work Program

18.1 Contractor's Organization

The Contractor shall supply to the Employer and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities within twenty-one (21) days of the Effective Date. The chart shall include the identities of the key personnel and the curricula vitae of such key personnel to be employed shall be supplied together with the chart. The Contractor shall promptly inform the Employer and the Project Manager in writing of any revision or alteration of such an organization chart.

18.2 Program of Performance

Within twenty-eight (28) days after the Effective Date, the Contractor shall submit to the Project Manager a detailed program of performance of the Contract, made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and precommission the Facilities, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the

Contractor to execute the Contract in accordance with the program and to achieve Completion, Commissioning and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in the Appendix to the Contract Agreement titled Time Schedule, and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Times for Completion specified in the PCC pursuant to Sub-Clause 8.2 and any extension granted in accordance with GCC Clause 40, and shall submit all such revisions to the Project Manager.

18.3 Progress Report

The Contractor shall monitor progress of all the activities specified in the program referred to in GCC Sub-Clause 18.2 above, and supply a progress report to the Project Manager every month.

The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.

18.4 Progress of Performance

If at any time the Contractor's actual progress falls behind the program referred to in GCC Sub-Clause 18.2, or it becomes apparent that it will so fall behind, the Contractor shall, at the request of the Employer or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under GCC Sub-Clause 8.2, any extension thereof entitled under GCC Sub-Clause 40.1, or any extended period as may otherwise be agreed upon between the Employer and the Contractor.

18.5 Procedures

The Contract shall be executed in accordance with the Contract Documents including the procedures given in the Forms and Procedures of the Employer's Requirements.

The Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.

19. Subcontracting

- 19.1 The Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved Subcontractors, specifies major items of supply or services and a list of approved Subcontractors against each item, including manufacturers. Insofar as no Subcontractors are listed against any such item, the Contractor shall prepare a list of Subcontractors for such item for inclusion in such list. The Contractor may from time to time propose any addition to or deletion from any such list. The Contractor shall submit any such list or any modification thereto to the Employer for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Employer for any of the Subcontractors shall not relieve the Contractor from any of its obligations, duties or responsibilities under the Contract.
- 19.2 The Contractor shall select and employ its Subcontractors for such major items from those listed in the lists referred to in GCC Sub-Clause 19.1.
- 19.3 For items or parts of the Facilities not specified in the Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved Subcontractors, the Contractor may employ such Subcontractors as it may select, at its discretion.
- 19.4 Each sub-contract shall include provisions which would entitle the Employer to require the sub-contract to be assigned to the Employer under GCC 19.5 (if and when applicable), or in event of termination by the Employer under GCC 42.2.
- 19.5 If a subcontractor's obligations extend beyond the expiry date of the relevant Defects Liability Period and the Project Manager, prior to that date, instructs the Contractor to assign the benefits of such obligations to the Employer, then the Contractor shall do so.

20. Design and Engineering

- 20.1 Specifications and Drawings

20.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.

The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Employer.

20.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Employer, by giving a notice of such disclaimer to the Project Manager.

20.2 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of Bid submission shall apply unless otherwise specified. During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Employer and shall be treated in accordance with GCC Clause 39.

20.3 Approval/Review of Technical Documents by Project Manager

20.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the Project Manager the documents listed in the Appendix to the Contract Agreement titled List of Documents for Approval or Review, for its approval or review as specified and in accordance with the requirements of GCC Sub-Clause 18.2 (Program of Performance).

Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof.

GCC Sub-Clauses 20.3.2 through 20.3.7 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only.

- 20.3.2 Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GCC Sub-Clause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes.

If the Project Manager fails to take such action within the said fourteen (14) days, then the said document shall be deemed to have been approved by the Project Manager.

- 20.3.3 The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with the Contract or that it is contrary to good engineering practice.
- 20.3.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GCC Sub-Clause 20.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), whereupon the document shall be deemed to have been approved.
- 20.3.5 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) thereto that cannot be settled between the Parties within a reasonable period, then such dispute or difference may be referred to a Dispute Board for determination in accordance with GCC Sub-Clause 46.1 hereof. If such dispute or difference is referred to a Dispute Board, the Project Manager shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the Dispute Board upholds the Contractor's view on the dispute and if the Employer

has not given notice under GCC Sub-Clause 46.3 hereof, then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Dispute Board shall decide, and the Time for Completion shall be extended accordingly.

20.3.6 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.

20.3.7 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GCC Sub-Clause 20.3.

If the Project Manager requests any change in any already approved document and/or in any document based thereon, the provisions of GCC Clause 39 shall apply to such request.

21. Procurement

21.1 Plant

Subject to GCC Sub-Clause 14.2, the Contractor shall procure and transport all Plant in an expeditious and orderly manner to the Site.

21.2 Employer-Supplied Plant

If the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, provides that the Employer shall furnish any specific items to the Contractor, the following provisions shall apply:

21.2.1 The Employer shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the Parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to GCC Sub-Clause 18.2, unless otherwise mutually agreed.

21.2.2 Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect or default. The Employer shall immediately remedy any shortage, defect or default, or the Contractor shall, if practicable and possible, at the request of the Employer, remedy such shortage, defect or default at the Employer's cost and expense. After inspection, such item shall fall under the care, custody and control of the Contractor. The provision of this GCC Sub-Clause 21.2.2 shall apply to any item supplied to remedy any such shortage or defect or to substitute for any defective item, or shall apply to defective items that have been repaired.

21.2.3 The foregoing responsibilities of the Contractor and its obligations of care, custody and control shall not relieve the Employer of liability for any undetected shortage, defect or default, nor place the Contractor under any liability for any such shortage, defect or default whether under GCC Clause 27 or under any other provision of Contract.

21.3 Transportation

21.3.1 The Contractor shall at its own risk and expense transport all the materials and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

21.3.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment.

21.3.3 Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile or electronic means, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the Parties.

21.3.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's

Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site.

21.4 Customs Clearance

The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Employer's obligations under GCC Sub-Clause 14.2, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Employer, the Employer shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance that are not the fault of the Contractor, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GCC Clause 40.

22. Installation

22.1 Setting Out/Supervision

22.1.1 Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines provided to it in writing by or on behalf of the Employer.

If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.

22.1.2 Contractor's Supervision: The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor

shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

22.2 Labor:

22.2.1 Engagement of Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, housing, feeding and transport.

The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills.

The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into the country where the Site is located. The Employer will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor's personnel.

The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.

22.2.2 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Employer's Personnel.

22.2.3 Labor Laws

The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.

The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labor.

22.2.4 Rates of Wages and Conditions of Labor

The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages and allowances as are chargeable under the Laws for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

22.2.5 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours **stated in the PCC**, unless:

- (a) otherwise stated in the Contract,
- (b) the Project Manager gives consent, or
- (c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case

the Contractor shall immediately advise the Project Manager.

If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Project Manager's consent thereto, the Project Manager shall not unreasonably withhold such consent.

This Sub-Clause shall not apply to any work which is customarily carried out by rotary or double-shifts.

22.2.6 Facilities for Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

22.2.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the performance of the Contract, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send to the Project Manager, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Project Manager may reasonably require.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information,

Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Subcontractors and Employer's and Project Manager's employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Facilities under Sub-Clause 18.2 an alleviation program for Site staff and labor and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose.

22.2.8 Funeral Arrangements

In the event of the death of any of the Contractor's personnel or accompanying members of their families, the Contractor shall be responsible for making the appropriate arrangements for their return or burial, unless otherwise **specified in the PCC.**

22.2.9 Records of Contractor's Personnel

The Contractor shall keep accurate records of the Contractor's personnel, including the number of each class of Contractor's Personnel on the Site and the names, ages,

genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis in a form approved by the Project Manager and shall be available for inspection by the Project Manager until the Contractor has completed all work.

22.2.10 Supply of Foodstuffs

The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.

22.2.11 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

22.2.12 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.

22.2.13 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal by Contractor's Personnel.

22.2.14 Arms and Ammunition

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

22.2.15 Prohibition of All Forms of Forced or Compulsory Labor

The contractor shall not employ "forced or compulsory labor" in any form. "Forced or compulsory labor" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

22.2.16 Prohibition of Harmful Child Labor

The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or

to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

22.3 Contractor's Equipment

22.3.1 All Contractor's Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.

22.3.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.

22.3.3 The Employer will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.

22.4 Site Regulations and Safety

The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the Project Manager, proposed Site regulations for the Employer's approval, which approval shall not be unreasonably withheld.

Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention.

22.5 Opportunities for Other Contractors

22.5.1 The Contractor shall, upon written request from the Employer or the Project Manager, give all reasonable

opportunities for carrying out the work to any other contractors employed by the Employer on or near the Site.

22.5.2 If the Contractor, upon written request from the Employer or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.

22.5.3 The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors and the workers of the Employer in regard to their work.

22.5.4 The Contractor shall notify the Project Manager promptly of any defects in the other contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.

22.6 Emergency Work

If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work.

If the Contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons therefor. If the work done or caused to be done by the

Employer is work that the Contractor was liable to do at its own expense under the Contract, the reasonable costs incurred by the Employer in connection therewith shall be paid by the Contractor to the Employer. Otherwise, the cost of such remedial work shall be borne by the Employer.

22.7 Site Clearance

22.7.1 Site Clearance in Course of Performance: In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage, rubbish or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

22.7.2 Clearance of Site after Completion: After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and Facilities in a clean and safe condition.

22.8 Watching and Lighting

The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

23. Test and Inspection

23.1 The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such tests and/or inspections of the Plant and any part of the Facilities as are specified in the Contract.

23.2 The Employer and the Project Manager or their designated representatives shall be entitled to attend the aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

23.3 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time

thereof to the Project Manager. The Contractor shall obtain from any relevant third Party or manufacturer any necessary permission or consent to enable the Employer and the Project Manager or their designated representatives to attend the test and/or inspection.

- 23.4 The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection.

If the Employer or Project Manager or their designated representatives fails to attend the test and/or inspection, or if it is agreed between the Parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.

- 23.5 The Project Manager may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impede the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.

- 23.6 If any Plant or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GCC Sub-Clause 23.3.

- 23.7 If any dispute or difference of opinion shall arise between the Parties in connection with or arising out of the test and/or inspection of the Plant or part of the Facilities that cannot be settled between the Parties within a reasonable period of time, it may be referred to an Dispute Board for determination in accordance with GCC Sub-Clause 46.3.

- 23.8 The Contractor shall afford the Employer and the Project Manager, at the Employer's expense, access at any reasonable time to any place where the Plant are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice.

23.9 The Contractor agrees that neither the execution of a test and/or inspection of Plant or any part of the Facilities, nor the attendance by the Employer or the Project Manager, nor the issue of any test certificate pursuant to GCC Sub-Clause 23.4, shall release the Contractor from any other responsibilities under the Contract.

23.10 No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such parts of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.

23.11 The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.

If any parts of the Facilities or foundations have been covered up at the Site after compliance with the requirement of GCC Sub-Clause 23.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Employer, and the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.

24. Completion of the Facilities

24.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Employer's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Employer in writing.

24.2 Within seven (7) days after receipt of the notice from the Contractor under GCC Sub-Clause 24.1, the Employer shall supply the operating and maintenance personnel specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer for Precommissioning of the Facilities or any part thereof.

Pursuant to the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, the Employer shall also provide, within the said seven (7) day period, the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Precommissioning of the Facilities or any part thereof.

- 24.3 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters have been provided by the Employer in accordance with GCC Sub-Clause 24.2, the Contractor shall commence Precommissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GCC Sub-Clause 25.5.
- 24.4 As soon as all works in respect of Precommissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall so notify the Project Manager in writing.
- 24.5 The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 24.4, either issue a Completion Certificate in the form specified in the Employer's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice under GCC Sub-Clause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.

If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GCC Sub-Clause 24.4.

If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's repeated notice.

If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within

seven (7) days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.

- 24.6 If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice under GCC Sub-Clause 24.4 or within seven (7) days after receipt of the Contractor's repeated notice under GCC Sub-Clause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.
- 24.7 As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.
- 24.8 Upon Completion, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

**25. Commissioning
and Operational
Acceptance**

25.1 Commissioning

- 25.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the Project Manager, pursuant to GCC Sub-Clause 24.5, or immediately after the date of the deemed Completion, under GCC Sub-Clause 24.6.
- 25.1.2 The Employer shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning.
- 25.1.3 In accordance with the requirements of the Contract, the Contractor's and Project Manager's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Employer.

25.2 Guarantee Test

25.2.1 Subject to GCC Sub-Clause 25.5, the Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test and any repeats thereof.

25.2.2 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion **specified in the PCC** or any other period agreed upon by the Employer and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GCC Sub-Clauses 28.2 and 28.3 shall not apply.

25.3 Operational Acceptance

25.3.1 Subject to GCC Sub-Clause 25.4 below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when

- (a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or
- (b) the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion specified in the PCC pursuant to GCC Sub-Clause 25.2.2 above or any other period agreed upon by the Employer and the Contractor; or
- (c) the Contractor has paid the liquidated damages specified in GCC Sub-Clause 28.3 hereof; and
- (d) any minor items mentioned in GCC Sub-Clause 24.7 hereof relevant to the Facilities or that part thereof have been completed.

25.3.2 At any time after any of the events set out in GCC Sub-Clause 25.3.1 have occurred, the Contractor may give a

notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Employer's Requirements (Forms and Procedures) in respect of the Facilities or the part thereof specified in such notice as of the date of such notice.

25.3.3 The Project Manager shall, after consultation with the Employer, and within seven (7) days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.

25.3.4 If within seven (7) days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.

25.4 Partial Acceptance

25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.

25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.

25.5 Delayed Precommissioning and/or Guarantee Test

25.5.1 In the event that the Contractor is unable to proceed with the Precommissioning of the Facilities pursuant to Sub-Clause 24.3, or with the Guarantee Test pursuant to Sub-Clause 25.2, for reasons attributable to the Employer either on account of non availability of other facilities

under the responsibilities of other contractor(s), or for reasons beyond the Contractor's control, the provisions leading to "deemed" completion of activities such as Completion, pursuant to GCC Sub-Clause 24.6, and Operational Acceptance, pursuant to GCC Sub-Clause 25.3.4, and Contractor's obligations regarding Defect Liability Period, pursuant to GCC Sub-Clause 27.2, Functional Guarantee, pursuant to GCC Clause 28, and Care of Facilities, pursuant to GCC Clause 32, and GCC Clause 41.1, Suspension, shall not apply. In this case, the following provisions shall apply.

25.5.2 When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to above Sub-Clause 25.5.1, the Contractor shall be entitled to the following:

- (a) the Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GCC Sub-Clause 26.2;
- (b) payments due to the Contractor in accordance with the provision specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which would not have been payable in normal circumstances due to non-completion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Employer, and which shall become null and void when the Contractor will have complied with its obligations regarding those payments, subject to the provision of Sub-Clause 25.5.3 below;
- (c) the expenses towards the above security and extension of other securities under the contract, of which validity needs to be extended, shall be reimbursed to the Contractor by the Employer;
- (d) the additional charges towards the care of the Facilities pursuant to GCC Sub-Clause 32.1 shall be reimbursed to the Contractor by the Employer for the period between the notification mentioned above and the notification mentioned in Sub-Clause

25.5.4 below. The provision of GCC Sub-Clause 33.2 shall apply to the Facilities during the same period.

25.5.3 In the event that the period of suspension under above Sub-Clause 25.5.1 actually exceeds one hundred eighty (180) days, the Employer and Contractor shall mutually agree to any additional compensation payable to the Contractor.

25.5.4 When the Contractor is notified by the Project Manager that the plant is ready for Precommissioning, the Contractor shall proceed without delay in performing Precommissioning in accordance with Clause 24.

F. Guarantees and Liabilities

26. Completion Time Guarantee

26.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the PCC pursuant to GCC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.

26.2 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 40, the Contractor shall pay to the Employer liquidated damages in the amount **specified in the PCC** as a percentage rate of the Contract Price or the relevant part thereof. The aggregate amount of such liquidated damages shall in no event exceed the amount **specified as “Maximum” in the PCC** as a percentage rate of the Contract Price. Once the “Maximum” is reached, the Employer may consider termination of the Contract, pursuant to GCC Sub-Clause 42.2.2.

Such payment shall completely satisfy the Contractor’s obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GCC Clause 40. The Contractor shall have no further liability whatsoever to the Employer in respect thereof.

However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract.

Save for liquidated damages payable under this GCC Sub-Clause 26.2, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in the Appendix to the Contract Agreement titled Time Schedule, and/or other program of work prepared pursuant to GCC Sub-Clause 18.2 shall not render the Contractor liable for any loss or damage thereby suffered by the Employer.

- 26.3 If the Contractor attains Completion of the Facilities or any part thereof before the Time for Completion or any extension thereof under GCC Clause 40, the Employer shall pay to the Contractor a bonus in the amount **specified in the PCC**. The aggregate amount of such bonus shall in no event exceed the amount **specified as “Maximum” in the PCC**.

27. Defect Liability

- 27.1 The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant supplied and of the work executed.

- 27.2 The Defect Liability Period shall be five hundred and forty (540) days from the date of Completion of the Facilities (or any part thereof) or one year from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the PCC pursuant to GCC Sub-Clause 27.10.

If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes:

- (a) improper operation or maintenance of the Facilities by the Employer;
- (b) operation of the Facilities outside specifications provided in the Contract; or
- (c) normal wear and tear.

- 27.3 The Contractor's obligations under this GCC Clause 27 shall not apply to:
- (a) any materials that are supplied by the Employer under GCC Sub-Clause 21.2, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein;
 - (b) any designs, specifications or other data designed, supplied or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein; or
 - (c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under GCC Sub-Clause 27.7.
- 27.4 The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.
- 27.5 The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GCC Clause 27.
- The Contractor may, with the consent of the Employer, remove from the Site any Plant or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.
- 27.6 If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests.
- If such part fails the tests, the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests shall be agreed upon by the Employer and the Contractor.
- 27.7 If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect

within a reasonable time (which shall in no event be considered to be less than fifteen (15) days), the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due the Contractor or claimed under the Performance Security.

- 27.8 If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons.
- 27.9 Except as provided in GCC Clauses 27 and 33, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Plant, design or engineering or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, or criminal or willful action of the Contractor.
- 27.10 In addition, any such component of the Facilities, and during the period of time as may be **specified in the PCC**, shall be subject to an extended defect liability period. Such obligation of the Contractor shall be in addition to the defect liability period specified under GCC Sub-Clause 27.2.

28. Functional Guarantees

- 28.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, subject to and upon the conditions therein specified.
- 28.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/or additions to the Plant or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor

eventually fails to meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract, pursuant to GCC Sub-Clause 42.2.2.

28.3 If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the said Appendix to the Contract Agreement is met, the Contractor shall, at the Contractor's option, either

- (a) make such changes, modifications and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Employer to repeat the Guarantee Test or
- (b) pay liquidated damages to the Employer in respect of the failure to meet the Functional Guarantees in accordance with the provisions in the Appendix to the Contract Agreement titled Functional Guarantees.

28.4 The payment of liquidated damages under GCC Sub-Clause 28.3, up to the limitation of liability specified in the Appendix to the Contract Agreement titled Functional Guarantees, shall completely satisfy the Contractor's guarantees under GCC Sub-Clause 28.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

29. Patent Indemnity

29.1 The Contractor shall, subject to the Employer's compliance with GCC Sub-Clause 29.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located; and (b) the sale of the products produced by the Facilities in any country.

Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.

- 29.2 If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in GCC Sub-Clause 29.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

- 29.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.

30. Limitation of Liability

- 30.1 Except in cases of criminal negligence or willful misconduct,
- (a) neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any indirect or consequential

loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and

- (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the amount resulting from the application of the multiplier specified in the PCC, to the Contract Price or, if a multiplier is not so specified, the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement.

G. Risk Distribution

31. Transfer of Ownership

- 31.1 Ownership of the Plant (including spare parts) to be imported into the country where the Site is located shall be transferred to the Employer upon loading on to the mode of transport to be used to convey the Plant from the country of origin to that country.
- 31.2 Ownership of the Plant (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Plant are brought on to the Site.
- 31.3 Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.
- 31.4 Ownership of any Plant in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Employer and the Contractor agree that the Plant in question are no longer required for the Facilities.
- 31.5 Notwithstanding the transfer of ownership of the Plant, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to GCC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant are incorporated.

32. Care of Facilities

- 32.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities

pursuant to GCC Clause 24 or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GCC Clause 27. Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clauses 32.2 and 38.1.

32.2 If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of

- (a) insofar as they relate to the country where the Site is located, nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GCC Clause 34 hereof; or
- (b) any use or occupation by the Employer or any third Party other than a Subcontractor, authorized by the Employer of any part of the Facilities; or
- (c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Employer, or any such matter for which the Contractor has disclaimed responsibility herein,

the Employer shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the Employer requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Employer in accordance with GCC Clause 39. If the Employer does not request the Contractor in writing to make good any loss or

damage to the Facilities thereby occasioned, the Employer shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Employer shall terminate the Contract pursuant to GCC Sub-Clause 42.1 hereof.

- 32.3 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GCC Sub-Clause 32.2 with respect to the Contractor's temporary facilities, and (ii) where such loss or damage arises by reason of any of the matters specified in GCC Sub-Clauses 32.2 (b) and (c) and 38.1.
- 32.4 With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in GCC Sub-Clause 38.1, the provisions of GCC Sub-Clause 38.3 shall apply.

**33. Loss of or
Damage to
Property;
Accident or
Injury to
Workers;
Indemnification**

- 33.1 Subject to GCC Sub-Clause 33.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Employer, its contractors, employees, officers or agents.
- 33.2 If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under GCC Sub-Clause 33.1, the Employer shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify

the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

- 33.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 34, provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.
- 33.4 The Party entitled to the benefit of an indemnity under this GCC Clause 33 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the Party fails to take such measures, the other Party's liabilities shall be correspondingly reduced.

34. Insurance

- 34.1 To the extent specified in the Appendix to the Contract Agreement titled Insurance Requirements, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.

(a) Cargo Insurance During Transport

Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant (including spare parts therefor) and to the Contractor's Equipment.

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect

Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third Parties including the Employer's personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(g) Other Insurances

Such other insurances as may be specifically agreed upon by the Parties hereto as listed in the Appendix to the Contract Agreement titled Insurance Requirements.

- 34.2 The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1 except for the Cargo Insurance During Transport, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

- 34.3 The Contractor shall, in accordance with the provisions of the Appendix to the Contract Agreement titled Insurance Requirements, deliver to the Employer certificates of insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.
- 34.4 The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.
- 34.5 The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix to the Contract Agreement titled Insurance Requirements, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insureds under all such policies. All insurers' rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Employer shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than twenty-one (21) days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Employer shall provide copies of the policies taken out by the Employer under this GCC Sub-Clause 34.5.
- 34.6 If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Sub-Clause 34.1, the Employer may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer fails to take out and/or maintain in effect the insurances referred to in GCC 34.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall

nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.

- 34.7 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GCC Clause 34, and all monies payable by any insurers shall be paid to the Contractor. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

**35. Unforeseen
Conditions**

- 35.1 If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions other than climatic conditions, or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities including any data as to boring tests, provided by the Employer, and on the basis of information that it could have obtained from a visual inspection of the Site if access thereto was available, or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and before performing additional work or using additional Plant or Contractor's Equipment, notify the Project Manager in writing of
- (a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen;
 - (b) the additional work and/or Plant and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions;

- (c) the extent of the anticipated delay; and
- (d) the additional cost and expense that the Contractor is likely to incur.

On receiving any notice from the Contractor under this GCC Sub-Clause 35.1, the Project Manager shall promptly consult with the Employer and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.

- 35.2 Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.

If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Sub-Clause 35.1, the Time for Completion shall be extended in accordance with GCC Clause 40.

36. Change in Laws and Regulations

- 36.1 If, after the date twenty-eight (28) days prior to the date of Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed which shall be deemed to include any change in interpretation or application by the competent authorities, that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the PCC pursuant to GCC Sub-Clause 11.2.

37. Force Majeure

- 37.1 “Force Majeure” shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which

is unavoidable notwithstanding the reasonable care of the Party affected, and shall include, without limitation, the following:

- (a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war
- (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts
- (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority
- (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague
- (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster
- (f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.

37.2 If either Party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

37.3 The Party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such Party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GCC Clause 40.

37.4 The Party or Parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations

under the Contract, but without prejudice to either Party's right to terminate the Contract under GCC Sub-Clauses 37.6 and 38.5.

37.5 No delay or nonperformance by either Party hereto caused by the occurrence of any event of Force Majeure shall

- (a) constitute a default or breach of the Contract, or
- (b) give rise to any claim for damages or additional cost or expense occasioned thereby, subject to GCC Sub-Clauses 32.2, 38.3 and 38.4

if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.

37.6 If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other, but without prejudice to either Party's right to terminate the Contract under GCC Sub-Clause 38.5.

37.7 In the event of termination pursuant to GCC Sub-Clause 37.6, the rights and obligations of the Employer and the Contractor shall be as specified in GCC Sub-Clauses 42.1.2 and 42.1.3.

37.8 Notwithstanding GCC Sub-Clause 37.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

38. War Risks

38.1 "War Risks" shall mean any event specified in paragraphs (a) and (b) of GCC Sub-Clause 37.1 and any explosion or impact of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war, occurring or existing in or near the country (or countries) where the Site is located.

38.2 Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to

- (a) destruction of or damage to Facilities, Plant, or any part thereof;

- (b) destruction of or damage to property of the Employer or any third Party; or
- (c) injury or loss of life

if such destruction, damage, injury or loss of life is caused by any War Risks, and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising in consequence of or in connection with the same.

38.3 If the Facilities or any Plant or Contractor's Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any War Risks, the Employer shall pay the Contractor for

- (a) any part of the Facilities or the Plant so destroyed or damaged to the extent not already paid for by the Employer

and so far as may be required by the Employer, and as may be necessary for completion of the Facilities

- (b) replacing or making good any Contractor's Equipment or other property of the Contractor so destroyed or damaged
- (c) replacing or making good any such destruction or damage to the Facilities or the Plant or any part thereof .

If the Employer does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Employer shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GCC Sub-Clause 42.1.

If the Employer requires the Contractor to replace or make good on any such destruction or damage to the Facilities, the Time for Completion shall be extended in accordance with GCC 40.

38.4 Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any War

Risks, provided that the Contractor shall as soon as practicable notify the Employer in writing of any such increased cost.

- 38.5 If during the performance of the Contract any War Risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any War Risks, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other.
- 38.6 In the event of termination pursuant to GCC Sub-Clauses 38.3 or 38.5, the rights and obligations of the Employer and the Contractor shall be specified in GCC Sub-Clauses 42.1.2 and 42.1.3.

H. Change in Contract Elements

39. Change in the Facilities

39.1 Introducing a Change

39.1.1 Subject to GCC Sub-Clauses 39.2.5 and 39.2.7, the Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities hereinafter called "Change", provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.

39.1.2 Value Engineering: The Contractor may prepare, at its own cost, a value engineering proposal at any time during the performance of the contract. The value engineering proposal shall, at a minimum, include the following;

- (a) the proposed change(s), and a description of the difference to the existing contract requirements;
- (b) a full cost/benefit analysis of the proposed change(s) including a description and estimate of costs (including life cycle costs) the Employer may incur in implementing the value engineering proposal; and
- (c) a description of any effect(s) of the change on performance/functionality.

The Employer may accept the value engineering proposal if the proposal demonstrates benefits that:

- (a) accelerates the delivery period; or
- (b) reduces the Contract Price or the life cycle costs to the Employer; or
- (c) improves the quality, efficiency, safety or sustainability of the Facilities; or
- (d) yields any other benefits to the Employer,

without compromising the necessary functions of the Facilities.

If the value engineering proposal is approved by the Employer and results in:

- (a) a reduction of the Contract Price; the amount to be paid to the Contractor shall be the percentage specified in the PCC of the reduction in the Contract Price; or
- (b) an increase in the Contract Price; but results in a reduction in life cycle costs due to any benefit described in (a) to (d) above, the amount to be paid to the Contractor shall be the full increase in the Contract Price.

39.1.3 Notwithstanding GCC Sub-Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.

39.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Sub-Clauses 39.2 and 39.3, and further details and forms are provided in the Employer's Requirements (Forms and Procedures).

39.2 Changes Originating from Employer

39.2.1 If the Employer proposes a Change pursuant to GCC Sub-Clause 39.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following:

- (a) brief description of the Change
- (b) effect on the Time for Completion
- (c) estimated cost of the Change
- (d) effect on Functional Guarantees (if any)
- (e) effect on the Facilities
- (f) effect on any other provisions of the Contract.

39.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the Project Manager an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:

- (a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal
- (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate
- (c) advise the Contractor that the Employer does not intend to proceed with the Change.

39.2.3 Upon receipt of the Employer's instruction to proceed under GCC Sub-Clause 39.2.2 (a), the Contractor shall, with proper

expedition, proceed with the preparation of the Change Proposal, in accordance with GCC Sub-Clause 39.2.1.

39.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the Parties thereto shall agree on specific rates for the valuation of the Change.

39.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GCC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen percent (15%), the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor's objection, the Employer shall withdraw the proposed Change and shall notify the Contractor in writing thereof.

The Contractor's failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.

39.2.6 Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.

If the Employer is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do

not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GCC Sub-Clause 39.2.2.

- 39.2.7 If the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a “Pending Agreement Change Order.”

Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The Parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.

If the Parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Dispute Board in accordance with the provisions of GCC Sub-Clause 46.1.

39.3 Changes Originating from Contractor

- 39.3.1 If the Contractor proposes a Change pursuant to GCC Sub-Clause 39.1.2, the Contractor shall submit to the Project Manager a written “Application for Change Proposal,” giving reasons for the proposed Change and including the information specified in GCC Sub-Clause 39.1.2.

Upon receipt of the Application for Change Proposal, the Parties shall follow the procedures outlined in GCC Sub-Clauses 39.2.6 and 39.2.7. However, the Contractor shall not be entitled to recover the costs of preparing the Application for Change Proposal.

40. Extension of Time for Completion

- 40.1 The Time(s) for Completion specified in the PCC pursuant to GCC Sub-Clause 8.2 shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:
- (a) any Change in the Facilities as provided in GCC Clause 39
 - (b) any occurrence of Force Majeure as provided in GCC Clause 37, unforeseen conditions as provided in GCC Clause 35, or other

occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Sub-Clause 32.2

- (c) any suspension order given by the Employer under GCC Clause 41 hereof or reduction in the rate of progress pursuant to GCC Sub-Clause 41.2 or
- (d) any changes in laws and regulations as provided in GCC Clause 36 or
- (e) any default or breach of the Contract by the Employer, Appendix to the Contract Agreement titled ,or any activity, act or omission of the Employer, or the Project Manager, or any other contractors employed by the Employer, or
- (f) any delay on the part of a Subcontractor, provided such delay is due to a cause for which the Contractor himself would have been entitled to an extension of time under this sub-clause, or
- (g) delays attributable to the Employer or caused by customs, or
- (h) any other matter specifically mentioned in the Contract

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

40.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to GCC Sub-Clause 46.1.

40.3 The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

40.4 In all cases where the Contractor has given a notice of a claim for an extension of time under GCC 40.2, the Contractor shall consult with the Project Manager in order to determine the steps (if any) which

can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall there after comply with all reasonable instructions which the Project Manager shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GCC 40.1, the amount of such extra costs shall be added to the Contract Price.

41. Suspension

- 41.1 The Employer may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the Project Manager.

If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GCC Clause 39, excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GCC Clause 39 or, where it affects the whole of the Facilities, as termination of the Contract under GCC Sub-Clause 42.1.

41.2 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a

substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice or

- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas in accordance with GCC Sub-Clause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may by fourteen (14) days' notice to the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

41.3 If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GCC Clause 41, then the Time for Completion shall be extended in accordance with GCC Sub-Clause 40.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.

41.4 During the period of suspension, the Contractor shall not remove from the Site any Plant, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.

42. Termination

42.1 Termination for Employer's Convenience

42.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GCC Sub-Clause 42.1.

42.1.2 Upon receipt of the notice of termination under GCC Sub-Clause 42.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii) below
- (c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition, and
- (d) subject to the payment specified in GCC Sub-Clause 42.1.3,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - (iii) deliver to the Employer all non-proprietary drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities.

42.1.3 In the event of termination of the Contract under GCC Sub-Clause 42.1.1, the Employer shall pay to the Contractor the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination
- (b) the costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment from the Site and in the repatriation of the Contractor's and its Subcontractors' personnel
- (c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges
- (d) costs incurred by the Contractor in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.1.2
- (e) the cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third Parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

42.2 Termination for Contractor's Default

42.2.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Contractor, referring to this GCC Sub-Clause 42.2:

- (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up, other than a voluntary liquidation for the purposes of amalgamation or reconstruction, a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any other analogous action in consequence of debt
- (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 43.

- (c) if the Contractor, in the judgment of the Employer has engaged in Fraud and Corruption, as defined in paragraph 2.2 a. of Appendix B to the GCC, in competing for or in executing the Contract.

42.2.2 If the Contractor

- (a) has abandoned or repudiated the Contract
- (b) has without valid reason failed to commence work on the Facilities promptly or has suspended, other than pursuant to GCC Sub-Clause 41.2, the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the Employer to proceed
- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause
- (d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Facilities in the manner specified in the program furnished under GCC Sub-Clause 18.2 at rates of progress that give reasonable assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended,

then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GCC Sub-Clause 42.2.

42.2.3 Upon receipt of the notice of termination under GCC Sub-Clauses 42.2.1 or 42.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination,

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities

already executed, or any work required to leave the Site in a clean and safe condition

- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below
- (c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
- (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors
- (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.2.4 The Employer may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third Party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, with all the maintenance costs to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of the Employer's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Facilities for such reasonable period as the Employer considers expedient for the supply and installation of the Facilities.

Upon completion of the Facilities or at such earlier date as the Employer thinks appropriate, the Employer shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.

42.2.5 Subject to GCC Sub-Clause 42.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as of the date of termination, the value of any unused or partially used Plant on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Sub-Clause 42.2.3. Any sums due the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.

42.2.6 If the Employer completes the Facilities, the cost of completing the Facilities by the Employer shall be determined.

If the sum that the Contractor is entitled to be paid, pursuant to GCC Sub-Clause 42.2.5, plus the reasonable costs incurred by the Employer in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.

If such excess is greater than the sums due the Contractor under GCC Sub-Clause 42.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due the Contractor under GCC Sub-Clause 42.2.5, the Employer shall pay the balance to the Contractor.

The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

42.3 Termination by the Contractor

42.3.1 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If

the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice, or

- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Employer referring to this GCC Sub-Clause 42.3.1, forthwith terminate the Contract.

42.3.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this GCC Sub-Clause 42.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Employer takes or suffers any other analogous action in consequence of debt.

42.3.3 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, then the Contractor shall immediately

- (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition

- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii)
- (c) remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractors' personnel from the Site, and
- (d) subject to the payment specified in GCC Sub-Clause 42.3.4,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors, and
 - (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.3.4 If the Contract is terminated under GCC Sub-Clauses 42.3.1 or 42.3.2, the Employer shall pay to the Contractor all payments specified in GCC Sub-Clause 42.1.3, and reasonable compensation for all loss, except for loss of profit, or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.

42.3.5 Termination by the Contractor pursuant to this GCC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GCC Sub-Clause 42.3.

42.4 In this GCC Clause 42, the expression "Facilities executed" shall include all work executed, Installation Services provided, and all Plant acquired, or subject to a legally binding obligation to purchase, by the Contractor and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.

- 42.5 In this GCC Clause 42, in calculating any monies due from the Employer to the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment.
- 43. Assignment** 43.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other Party, which consent shall not be unreasonably withheld, assign to any third Party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.
- 44. Export Restrictions** 44.1 Notwithstanding any obligation under the Contract to complete all export formalities, any port restrictions attributable to the Employer, to the country of the Employer or to the use of the Plant and Installation Services to be supplied which arise from trade regulations from a country supplying those Plant and Installation Services, and which substantially impede the Contractor from meeting its obligations under the Contract, shall release the Contractor from the obligation to provide deliveries or services, always provided, however, that the Contractor can demonstrate to the satisfaction of the Employer and of the Bank that it has completed all formalities in a timely manner, including applying for permits, authorizations and licenses necessary for the export of the Plant and Installation Services under the terms of the Contract. Termination of the Contract on this basis shall be for the Employer's convenience pursuant to Sub-Clause 42.1.

I. Claims, Disputes and Arbitration

- 45. Contractor's Claims** 45.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.
- If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all

liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Employer's liability, the Project Manager may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.

Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

- (a) this fully detailed claim shall be considered as interim;
- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and
- (c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager.

Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

Each Payment Certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The Project Manager shall agree with the Contractor or estimate: (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GCC Clause 40, and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

In the event that the Contractor and the Employer cannot agree on any matter relating to a claim, either Party may refer the matter to the Dispute Board pursuant to GCC 46 hereof.

46. Disputes and Arbitration

46.1 Appointment of the Dispute Board

Disputes shall be referred to a DB for decision in accordance with GCC Sub-Clause 46.3. The Parties shall appoint a DB by the date stated in the PCC.

The DB shall comprise, as stated in the PCC, either one or three suitably qualified persons ("the members"), each of whom shall be fluent in the language for communication defined in the Contract and shall be a professional experienced in the type of activities involved in the performance of the Contract and with the interpretation of contractual documents. If the number is not so stated and the Parties do not agree otherwise, the DB shall comprise three persons, one of whom shall serve as chairman.

If the Parties have not jointly appointed the DB 21 days before the date stated in the PCC and the DB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.

However, if a list of potential members is included in the PCC, the members shall be selected from those on the list, other than anyone who is unable or unwilling to accept appointment to the DB.

The agreement between the Parties and either the sole member or each of the three members shall incorporate by reference the General Conditions of Dispute Board Agreement contained in the Appendix to these General Conditions, with such amendments as are agreed between them.

The terms of the remuneration of either the sole member or each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment of the member or such expert (as the case may be). Each Party shall be responsible for paying one-half of this remuneration.

If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause.

The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DB (including each member) shall expire when the Operational Acceptance Certificate has been issued in accordance with GCC Sub-Clause 25.3.

46.2 Failure to Agree on the Composition of the Dispute Board

If any of the following conditions apply, namely:

- (a) the Parties fail to agree upon the appointment of the sole member of the DB by the date stated in the first paragraph of GCC Sub-Clause 46.1,
- (b) either Party fails to nominate a member (for approval by the other Party) of a DB of three persons by such date,
- (c) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DB by such date, or
- (d) the Parties fail to agree upon the appointment of a replacement person within 42 days after the date on which the sole member or one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,

then the appointing entity or official **named in the PCC** shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

46.3 Obtaining Dispute Board's Decision

If a dispute (of any kind whatsoever) arises between the Parties in connection with the performance of the Contract, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Project Manager, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the Project Manager. Such reference shall state that it is given under this Sub-Clause.

For a DB of three persons, the DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB.

Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s).

Within 84 days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-

Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue with the performance of the Facilities in accordance with the Contract.

If either Party is dissatisfied with the DB's decision, then either Party may, within 28 days after receiving the decision, give notice to the other Party of its dissatisfaction and intention to commence arbitration. If the DB fails to give its decision within the period of 84 days (or as otherwise approved) after receiving such reference, then either Party may, within 28 days after this period has expired, give notice to the other Party of its dissatisfaction and intention to commence arbitration.

In either event, this notice of dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in GCC Sub-Clauses 46.6 and 46.7, neither Party shall be entitled to commence arbitration of a dispute unless a notice of dissatisfaction has been given in accordance with this Sub-Clause.

If the DB has given its decision as to a matter in dispute to both Parties, and no notice of dissatisfaction has been given by either Party within 28 days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

46.4 Amicable Settlement

Where notice of dissatisfaction has been given under GCC Sub-Clause 46.3 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the fifty-sixth day after the day on which notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.

46.5 Arbitration

Unless **indicated otherwise in the PCC**, any dispute not settled amicably and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. Unless otherwise agreed by both Parties, arbitration shall be conducted as follows:

- (a) For contracts with foreign contractors:
 - (i) international arbitration with proceedings administered by the international arbitration institution **appointed in the PCC**, in accordance with the rules of arbitration of the appointed institution,
 - (ii) the place of arbitration shall be the city where the headquarters of the appointed arbitration institution is located or such other

place selected in accordance with the applicable arbitration rules; and

- (iii) the arbitration shall be conducted in the language for communications defined in Sub-Clause 5.3; and
- (b) For contracts with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer's Country.

The arbitrator(s) shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Project Manager, and any decision of the DB, relevant to the dispute. Nothing shall disqualify the Project Manager from being called as a witness and giving evidence before the arbitrator(s) on any matter whatsoever relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrator(s) to the evidence or arguments previously put before the DB to obtain its decision, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the DB shall be admissible in evidence in the arbitration.

Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, the Project Manager and the DB shall not be altered by reason of any arbitration being conducted during the progress of the Works.

46.6 Failure to Comply with Dispute Board's Decision

In the event that a Party fails to comply with a DB decision which has become final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under GCC Sub-Clause 46.5. GCC Sub-Clauses 46.3 and 46.4 shall not apply to this reference.

46.7 Expiry of Dispute Board's Appointment

If a dispute arises between the Parties in connection with the performance of the Contract, and there is no DB in place, whether by reason of the expiry of the DB's appointment or otherwise:

- (a) GCC Sub-Clauses 46.3 and 46.4 shall not apply, and
- (b) the dispute may be referred directly to arbitration under GCC Sub-Clause 46.5

APPENDIX A

General Conditions of Dispute Board Agreement

1. Definitions

Each “Dispute Board Agreement” is a tripartite agreement by and between:

the “Employer”;

the “Contractor”; and

the “Member” who is defined in the Dispute Board Agreement as being:

- (i) the sole member of the “DB” and, where this is the case, all references to the “Other Members” do not apply, or
- (ii) one of the three persons who are jointly called the “DB” (or “dispute board”) and, where this is the case, the other two persons are called the “Other Members”.

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the “Contract” and is defined in the Dispute Board Agreement, which incorporates this Appendix. In the Dispute Board Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

2. General Provisions

Unless otherwise stated in the Dispute Board Agreement, it shall take effect on the latest of the following dates:

- (a) the Commencement Date defined in the Contract,
- (b) when the Employer, the Contractor and the Member have each signed the Dispute Board Agreement, or
- (c) when the Employer, the Contractor and each of the Other Members (if any) have respectively each signed a dispute board agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days’ notice of resignation to the Employer and to the Contractor, and the Dispute Board Agreement shall terminate upon the expiry of this period.

3. Warranties

The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Project Manager. The Member shall promptly disclose, to each of them and to the Other Members (if any), any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

When appointing the Member, the Employer and the Contractor relied upon the Member's representations that he/she is:

- (a) experienced in the work which the Contractor is to carry out under the Contract,
- (b) experienced in the interpretation of contract documentation, and
- (c) fluent in the language for communications defined in the Contract.

4. General Obligations of the Member

The Member shall:

- (a) have no interest financial or otherwise in the Employer, the Contractor or the Project Manager, nor any financial interest in the Contract except for payment under the Dispute Board Agreement;
- (b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Project Manager, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Board Agreement;
- (c) have disclosed in writing to the Employer, the Contractor and the Other Members (if any), before entering into the Dispute Board Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Project Manager, and any previous involvement in the overall project of which the Contract forms part;
- (d) not, for the duration of the Dispute Board Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Project Manager, except as may be agreed in writing by the Employer, the Contractor and the Other Members (if any);
- (e) comply with the annexed procedural rules and with GCC Sub-Clause 46.3;
- (f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;
- (g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Project Manager regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Board Agreement;
- (h) ensure his/her availability for all site visits and hearings as are necessary;
- (i) become conversant with the Contract and with the progress of the Facilities (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;
- (j) treat the details of the Contract and all the DB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members (if any); and

- (k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members (if any).

5. General Obligations of the Employer and the Contractor

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DB's activities under the Contract and the Dispute Board Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the Contractor's Personnel respectively.

The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members (if any):

- (a) be appointed as an arbitrator in any arbitration under the Contract;
- (b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or
- (c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding paragraph.

Whenever the Employer or the Contractor refers a dispute to the DB under GCC Sub-Clause 46.3, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

6. Payment

The Member shall be paid as follows, in the currency named in the Dispute Board Agreement:

- (a) a retainer fee per calendar month, which shall be considered as payment in full for:
 - (i) being available on 28 days' notice for all site visits and hearings;
 - (ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - (iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and
 - (iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Clause.

The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Board Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.

With effect from the first day of the calendar month following the month in which Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by one third. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Board Agreement is otherwise terminated.

- (b) a daily fee which shall be considered as payment in full for:
 - (i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Member's home and the site, or another location of a meeting with the Other Members (if any);
 - (ii) each working day on site visits, hearings or preparing decisions; and
 - (iii) each day spent reading submissions in preparation for a hearing.
- (c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, faxes and telexes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Clause;
- (d) any taxes properly levied in the Country on payments made to the Member (unless a national or permanent resident of the Country) under this Clause 6.

The retainer and daily fees shall be as specified in the Dispute Board Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the date on which the Dispute Board Agreement became effective.

If the Parties fail to agree on the retainer fee or the daily fee the appointing entity or official named in the PCC shall determine the amount of the fees to be used.

The Member shall submit invoices for payment of the monthly retainer and air fares quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

If the Contractor fails to pay to the Member the amount to which he/she is entitled under the Dispute Board Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer

shall be entitled to reimbursement of all sums paid in excess of one-half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in accordance with GCC Sub-Clause 12.3.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

7. Termination

At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Board Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for in Clause 2.

If the Member fails to comply with the Dispute Board Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.

If the Employer or the Contractor fails to comply with the Dispute Board Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

8. Default of the Member

If the Member fails to comply with any of his obligations under Clause 4 concerning his impartiality or independence in relation to the Employer or the Contractor, he/she shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members (if any), for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

9. Disputes

Any dispute or claim arising out of or in connection with this Dispute Board Agreement, or the breach, termination or invalidity thereof, shall be finally settled by institutional arbitration. If no other arbitration institute is agreed, the arbitration shall be conducted under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with these Rules of Arbitration.

Appendix A

DISPUTE BOARD GUIDELINES

1. Unless otherwise agreed by the Employer and the Contractor, the DB shall visit the site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.
2. The timing of and agenda for each site visit shall be as agreed jointly by the DB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DB. The purpose of site visits is to enable the DB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims, and, as far as reasonable, to prevent potential problems or claims from becoming disputes.
3. Site visits shall be attended by the Employer, the Contractor and the Project Manager and shall be coordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.
4. The Employer and the Contractor shall furnish to the DB one copy of all documents which the DB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DB and the Employer or the Contractor shall be copied to the other Party. If the DB comprises three persons, the Employer and the Contractor shall send copies of these requested documents and these communications to each of these persons.
5. If any dispute is referred to the DB in accordance with GCC Sub-Clause 46.3, the DB shall proceed in accordance with GCC Sub-Clause 46.3 and these Guidelines. Subject to the time allowed to give notice of a decision and other relevant factors, the DB shall:
 - (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
 - (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.
6. The DB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.
7. Except as otherwise agreed in writing by the Employer and the Contractor, the DB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Project Manager, and to proceed in the absence of any Party who the DB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.
8. The Employer and the Contractor empower the DB, among other things, to:
 - (a) establish the procedure to be applied in deciding a dispute,
 - (b) decide upon the DB's own jurisdiction, and as to the scope of any dispute referred to it,
 - (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Guidelines,

- (d) take the initiative in ascertaining the facts and matters required for a decision,
- (e) make use of its own specialist knowledge, if any,
- (f) decide upon the payment of financing charges in accordance with the Contract,
- (g) decide upon any provisional relief such as interim or conservatory measures,
- (h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Project Manager, relevant to the dispute, and
- (i) appoint, should the DB so consider necessary and the Parties agree, a suitable expert at the cost of the Parties to give advice on a specific matter relevant to the dispute.

9. The DB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DB shall make and give its decision in accordance with GCC Sub-Clause 46.3, or as otherwise agreed by the Employer and the Contractor in writing. If the DB comprises three persons:

- (a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
- (b) it shall endeavor to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
- (c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - (i) either the Employer or the Contractor does not agree that they do so, or
 - (ii) the absent Member is the chairman and he/she instructs the other Members to not make a decision.

APPENDIX B

Fraud and Corruption

* 본 협약서의 영문 내용은 공식 번역문이 아니며, 불일치가 있는 경우 한글이 우선합니다.

The English text in this declaration is not an official translation. In case of discrepancy, the Korean version shall prevail.

경협기금 지원사업 참여관련 협약서

Declaration of participation in Economic Development Cooperation Fund (EDCF) financed projects

한국수출입은행 귀중

To The Export-Import Bank of Korea (the “Bank”)

사 업 명 :

Name of the Project (the “Project”):

당사는 표제의 대외경제협력기금(EDCF)(이하 “기금”이라 한다) 지원사업 참여와 관련하여, 다음 사항을 확인하고 준수할 것을 약속합니다.

We hereby confirm the following with regard to participation in the above-stated Project financed by the Economic Development Cooperation Fund (EDCF):

- 다 음 -

1. 문제유발행위 제재 관련

I. Declaration on Anti-Corruption and Anti-Malpractice

1. 당사는 「국제상거래에 있어서 외국공무원에 대한 뇌물방지법」의 내용을 충분히 숙지하고 이를 정히 준수하며, 표제 사업과 관련하여 동 법에 규정된 외국공무원 등에 대한 뇌물제공 등 부패행위와 사실왜곡 등 문제유발행위에 관여한 사실이 없으며, 앞으로도 이러한 행위에 관련되지 않겠음.

1. We undertake full understanding and compliance with the Act on Combating Bribery of Foreign Public Officials in International Business Transactions, and declare that neither we nor any other party acting on our behalf with regard to the Project has engaged or will engage in corrupt practices such as bribery and malpractices such as false statement.

2. 당사는 본 확약서 제출일 현재 대한민국의 ‘국가를 당사자로 하는 계약에 관한 법률’에 의거 입찰 참가자격이 제한되는 제재를 받고 있지 않으며, 다자개발은행(MDB)으로부터 부패행위와 사실왜곡 등 문제유발행위로 인하여 제재를 받고 있지 않음.

2. We hereby confirm that our company is not under any sanction in accordance with the Act on Contracts to which the State is a Party of the Republic of Korea, nor is under any sanction imposed by Multilateral Development Banks (MDBs) as a result of engaging in malpractices such as corruption and false statement, as of the date of submission of this Declaration of participation in Economic Development Cooperation Fund (EDCF) financed projects

3. 당사는 컨설턴트 고용계약 또는 구매계약을 신의에 따라 성실하게 이행하며, 정당한 사유 없는 계약 미이행, 대금 부당청구 등의 불성실한 계약 이행을 하지 않을 것임을 확약함.

3. We declare to carry out the consultant contract/procurement contract with utmost good faith, and not to engage in irresponsible misconduct such as nonfulfillment of a contract without proper reasoning or fraudulent

claims.

4. 당사는 다음에 해당하는 문제유발행위를 유발한 경우 또는 협약서에 기재된 내용이 거짓으로 판명되는 경우 귀행이 2 년 이내의 기금지원사업 참여 제한 등 조치를 취하더라도 어떠한 이의도 제기하지 않겠음.

가. 계약과 관련된 서류의 위. 변조 또는 허위기재

나. 과실에 의한 하자 또는 보수 발생

다. 부정하도급

라. 조사설계 및 타당성조사용역 부실

마. 계약위반

바. 공중 손해 사고

사. 업무 관계자 사고

아. 뇌물공여

자. 담 합

차. 입찰 및 계약체결 등 방해

카. 부정 또는 불성실한 행위

4. In the event that our company engages in any activity falling under the malpractice category set out below, or be under sanctions imposed by the MDBs, we declare not to raise any objections to the Bank's measures with regard to such activity, including the prohibition of participation in projects financed by EDCF loan for up to two years.

- a. False Statements
- b. Negligent Operations
- c. Improper Subcontracting
- d. Poor Survey and Design Services, Feasibility Studies
- e. Breach of Contract
- f. Damage or Injury to the Public
- g. Damage or Injury to a Person Involved in the Operation
- h. Bribery
- i. Bid Rigging
- j. Interference in Bidding and Contract Conclusion
- k. Wrongful or Dishonest Acts

II. 법적 권리 및 청구권 관련

II . Declaration on Legal Rights and Claims

1. 당사는 입찰서류 또는 계약서가 당사와 차주(사업실시기관 포함. 이하 같다)의 권리의무관계를 규율하는 바, 당사는 동 입찰서 또는 계약서를 근거로 귀행에 대한 어떠한 법적 권리 또는 청구권을 갖지 않음을 확인함.

1. We acknowledge that the bidding documents and the contract stipulate the rights and obligations of the Supplier and the Borrower(including the Project Executing Agency), and thus we do not have any legal rights nor claims whatsoever against the Bank, which is not a party to the contract, with regard to the bidding documents or the contract.

2. 당사는 차관공여계약서의 당사자는 귀행과 차주이며, 제 3 자인 당사는 동 차관계약서를 근거로 귀행을 상대로 어떠한 권리나 청구권도 갖지 않음을 확인함.

2. We also acknowledge that Loan Agreement governs the relationship between the Borrower and the Bank, and that our company, as a third party, do not have any legal rights nor claims whatsoever derived therefrom.

3. 이에 따라, 당사는 당사가 입찰에 탈락하거나 입찰서류 및 계약서의 하자 또는 불이행 등으로 손실을 입는 경우에도 귀행을 상대로 법적 소송을 포함하여 어떠한 형태의 이의도 제기하지 않을 것을 약속함.

3. Therefore, we hereby declare not to raise any objections against the Bank including lawsuits, in the event of tender failure or losses due to defects or nonfulfillment of the contract.

III. 인권 및 환경보호. 건강, 안전 기준 준수 관련

III. Declaration on Human Rights. Environment Protection. Health and Safety

1. 당사는 사업을 수행함에 있어서 적용되는 노동법 및 국제노동기구(ILO)의 핵심노동기준(Core labor standard)을 준수할 것임을 약속함.

1. We undertake to comply with relevant labor laws and the Core Labor Standards of the International Labour Standards(ILO) in the process of contract execution.

2. 당사는 사업을 수행함에 있어서 적용되는 환경보호. 건강 및 안전에 관한 국제 또는 현지국 기준을 준수할 것을 약속함.

2. We undertake to comply with relevant international/local standards with regard to environment protection, health and safety in the process of contract execution.

년 월 일

Year Month Date

회사명 :

Name of Company :

대표자: (인)

Name of Authorized Signatory Signature

Section IX - Particular Conditions of Contract

The following Particular Conditions of Contract shall supplement the General Conditions of Contract in Section VIII. Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions.

Particular Conditions of Contract (PCC)

The following Particular Conditions (PCC) shall supplement the General Conditions (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC. The clause number of the PCC is the corresponding clause number of the GCC.

PCC 1. Definitions	<p>The Employer is: <i>Ministry of Energy and Mines</i></p> <p>The Project Manager is: <i>Eng. Alexis Vega</i></p> <p>The Bank is: Korea Export and Import Bank / <i>EDCF</i></p> <p>Country of Origin: all countries and territories as indicated in Section V of the bidding document, Eligible Countries.</p>
PCC 5. Law and Language	<p>PCC 5.1 The Contract shall be interpreted in accordance with the Laws of: Nicaragua.</p> <p>PCC 5.2 The ruling language is: <i>English</i></p> <p>PCC 5.3 The language for communications is: <i>English</i></p>
PCC 7. Scope of Facilities [Spare Parts] (GCC Clause 7)	<p>PCC 7.3 The Contractor agrees to supply spare parts for a period of years: 1year</p> <p>Sample Addition to PCC 7.3</p> <p>The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares for the Plant. Other spare parts and components shall be supplied as promptly as possible, but at the most within six (6) months of placing the order and opening the letter of credit. In addition, in the event of termination of the production of spare parts, advance notification will be made to the Employer of the pending termination, with sufficient time to permit the Employer to procure the needed requirement. Following such termination, the Contractor will furnish to the extent possible and at no cost to the Employer the blueprints, drawings and specifications of the spare parts, if requested.</p>
PCC 8. Time for Commencement and Completion	<p>PCC 8.1 The Contractor shall commence work on the Facilities within 1month from the Effective Date for determining Time for Completion as specified in the Contract Agreement.</p> <p>PCC 8.2 The Time for Completion of the whole of the Facilities shall be 27month from the Effective Date as described in the Contract Agreement.</p>
PCC 11. Contract Price	PCC 11.2 Not Applicable
PCC 13. Securities	PCC 13.3.1 The amount of Performance Security, as a percentage of the Contract Price for the Facility or for the part of the Facility for

	<p>which a separate Time for Completion is provided, shall be: the amount(s) of 10% (Ten percent) of the Contract Price.</p> <p>PCC 13.3.2 The Performance Security shall be in the form of the unconditional and irrevocable attached hereto in Section X, Contract Forms.</p> <p>PCC 13.3.3 The Performance Security shall not be reduced on the date of the Operational Acceptance.</p>
PCC 22. Installation	<p>PCC22.2.5 Working Hours</p> <p>Normal working hours are: _ 8hours / day</p>
PCC 25. Commissioning and Operational Acceptance	<p>PCC 25.2.2 The Guarantee Test of the Facilities shall be successfully completed within 28 days from the date of Completion.</p>
PCC 26. Completion Time Guarantee	<p>PCC 26.2</p> <p>Applicable rate for liquidated damages: 0.01% / day</p> <p>The above rate applies to the price of the part of the Facilities, as quoted in the Price Schedule, for that part for which the Contractor fails to achieve Completion within the particular Time for Completion.</p> <p>Maximum deduction for liquidated damages: 10%</p> <p>PCC 26.3 Applicable (<i>amount or rate</i>) for the bonus for early Completion:</p> <p>Maximum bonus:</p> <p>PCC 26.3 No bonus will be given for earlier Completion of the Facilities or part thereof.</p>
PCC 27. Defect Liability	<p>PCC 27.10 The critical components covered under the extended defect liability are module, inverter, controller, battery, light, and the period shall be _12months (<i>to be inserted only when an extended defect liability is requested</i>).</p>
PCC 30. Limitation of Liability	<p>Sample Clause</p> <p>PCC 30.1 (b) The multiplier of the Contract Price is: 5% of the Contract Amount</p>
PCC 39. Value Engineering	<p>PCC 39.1.2 If the value engineering proposal is approved by the Employer the amount to be paid to the Contractor shall be 50% (insert appropriate percentage. The percentage is normally up to 50%) of the reduction in the Contract Price</p>

PCC46. Disputes and Arbitration	PCC 46.1	The DB shall be appointed within [28 days] after the Effective Date.
	PCC 46.1	The DB shall be:
		<i>Administered by Singapore International Arbitration Centre</i>
		<i>or</i>
		<i>Conducted in accordance with the roles of SIAC rules shall apply</i>
	PCC 46.1	List of potential DB members is: None
	PCC 46.2	Appointment (if not agreed) to be made by:
	PCC 46.5	Procedure to settle disputes in respect of DB's decisions: By SIAC
	(a)	Appointed arbitration institution

Section X - Contract Forms

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Notification of Intention to Award

[This Notification of Intention to Award shall be sent to each Bidder that submitted a Bid.]

[Send this Notification to the Bidder's Authorized Representative named in the Bidder Information Form]

For the attention of Bidder's Authorized Representative

Name: *[insert Authorized Representative's name]*

Address: *[insert Authorized Representative's Address]*

Telephone/Fax numbers: *[insert Authorized Representative's telephone/fax numbers]*

Email Address: *[insert Authorized Representative's email address]*

[IMPORTANT: insert the date that this Notification is transmitted to Bidders. The Notification must be sent to all Bidders simultaneously. This means on the same date and as close to the same time as possible.]

DATE OF TRANSMISSION: This Notification is sent by: *[email/fax]* on *[date]* (local time)

Notification of Intention to Award

Employer: *[insert the name of the Employer]*

Project: *[insert name of project]*

Contract title: *[insert the name of the contract]*

Country: *[insert country where RFB is issued]*

Loan No. /Credit No. / Grant No.: *[insert reference number for loan/credit/grant]*

RFB No: *[insert RFB reference number from Procurement Plan]*

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period, you may:

- a) request a debriefing in relation to the evaluation of your Bid, and/or
- b) submit a Procurement-related Complaint in relation to the decision to award the contract.

1. The successful Bidder

Name:	<i>[insert name of successful Bidder]</i>
Address:	<i>[insert address of the successful Bidder]</i>
Contract price:	<i>[insert contract price of the successful Bid]</i>

2. Other Bidders *[INSTRUCTIONS: insert names of all Bidders that submitted a Bid. If the Bid's price was evaluated include the evaluated price as well as the Bid price as read out.]*

Name of Bidder	Bid price	Evaluated Bid Cost
<i>[insert name]</i>	<i>[insert Bid price]</i>	<i>[insert evaluated cost]</i>
<i>[insert name]</i>	<i>[insert Bid price]</i>	<i>[insert evaluated cost]</i>
<i>[insert name]</i>	<i>[insert Bid price]</i>	<i>[insert evaluated cost]</i>
<i>[insert name]</i>	<i>[insert Bid price]</i>	<i>[insert evaluated cost]</i>
<i>[insert name]</i>	<i>[insert Bid price]</i>	<i>[insert evaluated cost]</i>

3. Reason/s why your Bid was unsuccessful

[INSTRUCTIONS: State the reason/s why this Bidder's Bid was unsuccessful. Do NOT include: (a) a point by point comparison with another Bidder's Bid or (b) information that is marked confidential by the Bidder in its Bid.]

4. How to request a debriefing

DEADLINE: The deadline to request a debriefing expires at midnight on *[insert date]* (local time).

You may request a debriefing in relation to the results of the evaluation of your Bid. If you decide to request a debriefing, your written request must be made within three (3) Business Days of receipt of this Notification of Intention to Award.

Provide the contract name, reference number, name of the Bidder, contact details; and address the request for debriefing as follows:

Attention: *[insert full name of person, if applicable]*

Title/position: *[insert title/position]*

Agency: *[insert name of Employer]*

Email address: *[insert email address]*

Fax number: *[insert fax number] delete if not used*

If your request for a debriefing is received within the 3 Business Days deadline, we will provide the debriefing within five (5) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (5) Business Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.

The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.

If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of the Contract Award Notice.

5. How to make a complaint

Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [insert date] (local time).

Provide the contract name, reference number, name of the Bidder, contact details; and address the Procurement-related Complaint as follows:

Attention: [insert full name of person, if applicable]

Title/position: [insert title/position]

Agency: [insert name of Employer]

Email address: [insert email address]

Fax number: [insert fax number] **delete if not used**

At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.

Further information:

For more information see the [Procurement Regulations for IPF Borrowers \(Procurement Regulations\)\[https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=4005\]](https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=4005) (Annex III). You should read these provisions before preparing and submitting your complaint. In addition, the EDCF's Guidance "[How to make a Procurement-related Complaint](http://www.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework#framework)" [<http://www.worldbank.org/en/projects-operations/products-and-services/brief/procurement-new-framework#framework>] provides a useful explanation of the process, as well as a sample letter of complaint.

In summary, there are four essential requirements:

1. You must be an 'interested party'. In this case, that means a Bidder who submitted a Bid in this bidding process, and is the recipient of a Notification of Intention to Award.

2. The complaint can only challenge the decision to award the contract.
3. You must submit the complaint within the period stated above.
4. You must include, in your complaint, all of the information required by the Procurement Regulations (as described in Annex III).

6. Standstill Period

DEADLINE: The Standstill Period is due to end at midnight on [insert date] (local time).

The Standstill Period lasts ten (10) Business Days after the date of transmission of this Notification of Intention to Award.

The Standstill Period may be extended as stated in Section 4 above.

If you have any questions regarding this Notification please do not hesitate to contact us.

On behalf of the Employer:

Signature: _____

Name: _____

Title/position: _____

Telephone: _____

Email: _____

Beneficial Ownership Disclosure Form

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM

This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful Bidder¹. In case of joint venture, the Bidder must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.

For the purposes of this Form, a Beneficial Owner of a Bidder is any natural person who ultimately owns or controls the Bidder by meeting one or more of the following conditions:

- *directly or indirectly holding 25% or more of the shares*
- *directly or indirectly holding 25% or more of the voting rights*
- *directly or indirectly having the right to appoint a majority of the board of directors or*

RFB No.: *[insert number of RFB process]*

Request for Bid No.: *[insert identification]*

To: *[insert complete name of Employer]*

In response to your request in the Letter of Acceptance dated *[insert date of letter of Acceptance]* to furnish additional information on beneficial ownership: *[select one option as applicable and delete the options that are not applicable]*

(i) we hereby provide the following beneficial ownership information.

Details of beneficial ownership

Identity of Beneficial Owner	Directly or indirectly holding 25% or more of the shares (Yes / No)	Directly or indirectly holding 25 % or more of the Voting Rights (Yes / No)	Directly or indirectly having the right to appoint a majority of the board of the directors or an

			equivalent governing body of the Bidder (Yes / No)
<i>[include full name (last, middle, first), nationality, country of residence]</i>			

OR

(ii) *We declare that there is no Beneficial Owner meeting one or more of the following conditions:*

- directly or indirectly holding 25% or more of the shares
- directly or indirectly holding 25% or more of the voting rights
- directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Bidder

OR

(iii) *We declare that we are unable to identify any Beneficial Owner meeting one or more of the following conditions. [If this option is selected, the Bidder shall provide explanation on why it is unable to identify any Beneficial Owner]*

- directly or indirectly holding 25% or more of the shares
- directly or indirectly holding 25% or more of the voting rights
- directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Bidder]"

Name of the Bidder: **[insert complete name of the Bidder]*

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ***[insert complete name of person duly authorized to sign the Bid]*

Title of the person signing the Bid: *[insert complete title of the person signing the Bid]*

Signature of the person named above: *[insert signature of person whose name and capacity are shown above]*

Date signed *[insert date of signing]* **day of** *[insert month]*, *[insert year]*

* In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder. In the event that the Bidder is a joint venture, each reference to “Bidder” in the Beneficial Ownership Disclosure Form (including this Introduction thereto) shall be read to refer to the joint venture member.

** Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

Letter of Acceptance

To: _____

This is to notify you that your Bid dated _____ for execution of the _____ for the Contract Price in the aggregate of _____, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish (i) the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms and (ii) the additional information on beneficial ownership in accordance with BDS ITB 46.1, within eight (8) Business days using the Beneficial Ownership Disclosure Form, included in Section X, - Contract Forms, of the bidding document.

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Agency: _____

Attachment: Contract Agreement

Contract Agreement

THIS AGREEMENT is made the _____ day of _____, _____,

BETWEEN

(1) _____, a corporation incorporated under the laws of _____ and having its principal place of business at _____ (hereinafter called “the Employer”), and (2) _____, a corporation incorporated under the laws of _____ and having its principal place of business at _____ (hereinafter called “the Contractor”).

WHEREAS the Employer desires to engage the Contractor to design, manufacture, test, deliver, install, complete and commission certain Facilities, viz. _____ (“the Facilities”), and the Contractor has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

Article 1. Contract Documents

1.1 Contract Documents (Reference GCC Clause 2)

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract:

- (a) This Contract Agreement and the Appendices hereto
- (b) Letter of Bid and Price Schedules submitted by the Contractor
- (c) Particular Conditions
- (d) General Conditions
- (e) Specification
- (f) Drawings
- (g) Other completed Bidding forms submitted with the Bid
- (h) Any other documents forming part of the Employer’s Requirements
- (i) Any other documents shall be added here

- Article 2. Contract Price and Terms of Payment**
- 1.2 Order of Precedence (Reference GCC Clause 2)
In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.
- 1.3 Definitions (Reference GCC Clause 1)
Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the General Conditions.
- 2.1 Contract Price (Reference GCC Clause 11)
The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of: _____, _____ as specified in Price Schedule No. 5 (Grand Summary), and _____, _____, or such other sums as may be determined in accordance with the terms and conditions of the Contract.
- 2.2 Terms of Payment (Reference GCC Clause 12)
The terms and procedures of payment according to which the Employer will reimburse the Contractor are given in the Appendix (Terms and Procedures of Payment) hereto.
The Employer may instruct its bank to issue an irrevocable confirmed documentary credit made available to the Contractor in a bank in the country of the Contractor. The credit shall be for an amount of _____; and shall be subject to the Uniform Customs and Practice for Documentary Credits 2007 Revision, ICC Publication No. 600.
In the event that the amount payable under Schedule No. 1 is adjusted in accordance with GCC 11.2 or with any of the other terms of the Contract, the Employer shall arrange for the documentary credit to be amended accordingly.
- Article 3. Effective Date**
- 3.1 Effective Date (Reference GCC Clause 1)
The Effective Date from which the Time for Completion of the Facilities shall be counted is the date when all of the following conditions have been fulfilled:
- (a) This Contract Agreement has been duly executed for and on behalf of the Employer and the Contractor;

- (b) The Contractor has submitted to the Employer the Performance Security and the advance payment guarantee;
- (c) The Employer has paid the Contractor the advance payment
- (d) The Contractor has been advised that the documentary credit referred to in Article 2.2 above has been issued in its favor.

Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.

- 3.2 If the conditions listed under 3.1 are not fulfilled within two (2) months from the date of this Contract notification because of reasons not attributable to the Contractor, the Parties shall discuss and agree on an equitable adjustment to the Contract Price and the Time for Completion and/or other relevant conditions of the Contract.

**Article 4.
Communications**

- 4.1 The address of the Employer for notice purposes, pursuant to GCC 4.1 is: Mr. Alexis Vega – Program Director

MEM/FODIEN-DERAR

Edificio Vista Development, 2 Piso

Villa Fontana, Managua

- 4.2 The address of the Contractor for notice purposes, pursuant to GCC 4.1 is: _____.

Article 5. Appendices

- 5.1 The Appendices listed in the attached List of Appendices shall be deemed to form an integral part of this Contract Agreement.
- 5.2 Reference in the Contract to any Appendix shall mean the Appendices attached hereto, and the Contract shall be read and construed accordingly.

IN WITNESS WHEREOF the Employer and the Contractor have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Signed by, for and on behalf of the Employer

[Signature]

[Title]

in the presence of _____

Signed by, for and on behalf of the Contractor

[Signature]

[Title]

in the presence of _____

APPENDICES

Appendix 1 Terms and Procedures of Payment

Appendix 2 Price Adjustment

Appendix 3 Insurance Requirements

- Appendix 4 Time Schedule
- Appendix 5 List of Major Items of Plant and Installation Services and List of Approved Subcontractors
- Appendix 6 Scope of Works and Supply by the Employer
- Appendix 7 List of Documents for Approval or Review
- Appendix 8 Functional Guarantees

Appendix 1. Terms and Procedures of Payment

In accordance with the provisions of GCC Clause 12 (Terms of Payment), the Employer shall pay the Contractor in the following manner and at the following times, on the basis of the Price Breakdown given in the section on Price Schedules. Payments will be made in the currencies quoted by the Bidder unless otherwise agreed between the Parties. Applications for payment in respect of part deliveries may be made by the Contractor as work proceeds.

Tax Exemptions:

To apply the tax exemptions to goods and services from Korea and Nicaragua, the Contractor will make the respective consultations prior sending any type of information, to subsequently issue the invoices for the goods and services of the project, whose country of origin is South Korea.

To apply tax exemptions to materials originating in Nicaragua, an invoices will be issued through the branch called _____, with a RUC number: _____ which has been registered in the Republic of Nicaragua for that purpose.

The materials acquired in the Republic of Nicaragua should be used only in the works associated with the project and the Employer shall corroborate the quantities purchased are those actually used in the works.

The taxes related to the Installation Services provided by the Local Sub Contractor are not exempt from taxes, Therefore they must be included and implicit in the contract signed between the parties.

Excluded from tax exemption: lodging, food, clothing, consumer goods, purchase or leasing of vehicles or any other means of transportation, rental of offices or homes, rental of warehouses, basic services (telephony, water, energy, cable, internet) , appliances, jewelry, fuel, customs expenses, personal or corporate insurance, office items or equipment, expenses associated with logistics, temporary facilities of The Contractor or Sub Contractor in the works, and / or any other expense or cost associated with the personnel of The contractor.

Local Services (Sub Contractor):

The Contractor up to no more than 15 days after receiving the payment by the Employer shall make the respective payments to the companies or natural individuals that provided materials, installation services or logistics in the Republic of Nicaragua. In the case of The Employer receives a written complaint from a local supplier against The Contractor, there will be a maximum of three written notifications that will be part of the contract file and will be reported to The Export and Import Bank of Korea will be informed in order to implement any Bank legal instrument for these cases.

TERMS OF PAYMENT

The Employer shall pay to the Contractor:

1. Advance Payment Security

Advance Payment of **Fifty Percent (50%)** of the total value of the contract to be paid within the following fifteen (15) days subsequently of the signing of the contract, against payment claim and the presentation of a bank guarantee for an amount equivalent to 100% of the advance delivered.

The warranty period is valid for six (6) month and will be issued by a bank regulated by the Superintendence of Bank and Other Financial Institutions (SIBOIF) of the Republic of Nicaragua or by a Prestige Bank of an eligible country with correspondent in Nicaragua. The guarantee should be executable at the first request.

The advance payment will not be amortized over time, and the Contractor is obliged to use it in the following manner:

- a) For Payment of at least Sixty Percent (60%) of the Local Contract that corresponds to 33% of the total amount disbursed.
- b) For Payment of at least Sixty Percent (60%) of the Contract subscribed with the Manufacturers and / or suppliers of the supplies or materials corresponding to 60% of the total amount disbursed.
- c) To cover the Administrative and Operative Expenses of the Contractor corresponding to Seven Percent (7%) of the total amount disbursed.

The Contractor within one (1) month after the receipt of the Advance payment, must deliver a copy in English and / or Spanish of the Contracts and / or Invoices issued by the Sub Contractor, Manufacturer and / or Suppliers until the minimum of the total amount is reached indicated in a) + b) in order to support the correct use of the funds in the project. The amount of c) is redeemable in the Payment for Advance of Works.

2. First Payment

The first payment corresponds to **Twenty-Five Percent (25%)** of the total amount of the contract to be paid within the following fifteen (15) days after the presentation of: a) Letter of Request for Payment; b) Boarding documents; b) Packaging List; c) Certificate of Origin; d) Original invoice. This amount corresponds to the remaining 40% for the manufacture and / or acquisition of supplies or materials to be used in the project.

The aforementioned documents must be issued in the name of the Employer, in order to enjoy the tax benefits of this project.

3. Payment for Advance of Works

This payment corresponds to the monthly advance for works executed up to **Fifteen Percent (15%)** of the total amount of the contract. The progress of works will be paid to Employer's entire satisfaction within the following fifteen (15) days after the

presentation of: a) Letter of Request for Payment; b) Original invoice; c) Assessment of Physical Advancement; d) Monthly Progress Report.

4. Final Payment

The final payment corresponds to **Ten Percent (10%)** of the total amount of the contract to be paid to the Employer's entire satisfaction within the following fifteen (15) days after the presentation of: a) Letter of Request for Payment; b) Original invoice; c) Final Reception Certificate; d) Works Completion; e) As Built Plans; f) Acceptance Minutes for each Beneficiary, and g) Technical - Managerial Report of Project Closing in Spanish and English.

In the event that the Employer fails to make any payment on its respective due date, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate of _____/percent (___%) per month for period of delay until payment has been made in full.

PAYMENT PROCEDURES

The procedures to be followed in applying for certification and making payments shall be as follows:

Appendix 2. Price Adjustment

Where the Contract Period (excluding the Defects Liability Period) exceeds thirty (30) months, it is normal procedure that prices payable to the Contractor shall be subject to adjustment during the performance of the Contract to reflect changes occurring in the cost of labor and material components. In such cases the bidding document shall include in this Appendix 2 a formula of the following general type, pursuant to GCC Sub-Clause 11.2.

Where Contracts are of a shorter duration than thirty (30) months or in cases where there is to be no Price Adjustment, the following provision shall not be included. Instead, it shall be indicated under this Appendix 2 that the prices are to remain firm and fixed for the duration of the Contract.

Sample Price Adjustment Formula

If in accordance with GCC 11.2, prices shall be adjustable, the following method shall be used to calculate the price adjustment:

Prices payable to the Contractor, in accordance with the Contract, shall be subject to adjustment during performance of the Contract to reflect changes in the cost of labor and material components, in accordance with the following formula:

$$P_1 = P_0 \times \left(a + b \frac{L_1}{L_0} + c \frac{M_1}{M_0} \right) - P_0$$

in which:

P_1 = adjustment amount payable to the Contractor

P_0 = Contract price (base price)

a = percentage of fixed element in Contract price ($a = \%$)

b = percentage of labor component in Contract price ($b = \%$)

c = percentage of material and equipment component in Contract price ($c = \%$)

L_0, L_1 = labor indices applicable to the appropriate industry in the country of origin on the base date and the date for adjustment, respectively

M_0, M_1 = material and equipment indices in the country of origin on the base date and the date for adjustment, respectively

N.B. $a+b+c=100\%$.

Conditions Applicable To Price Adjustment

The Bidder shall indicate the source of labor and materials indices, source of exchange rates and the base date indices in its Bid.

<u>Item</u>	<u>Source of Indices Used</u>	<u>Base Date Indices</u>
-------------	-------------------------------	--------------------------

The base date shall be the date twenty-eight (28) days prior to the Bid closing date.

The date of adjustment shall be the mid-point of the period of manufacture or installation of component or Plant.

The following conditions shall apply:

- (a) No price increase will be allowed beyond the original delivery date unless covered by an extension of time awarded by the Employer under the terms of the Contract. No price increase will be allowed for periods of delay for which the Contractor is responsible. The Employer will, however, be entitled to any price decrease occurring during such periods of delay.
- (b) If the currency in which the Contract price, P_0 , is expressed is different from the currency of the country of origin of the labor and/or materials indices, a correction factor will be applied to avoid incorrect adjustments of the Contract price. The correction factor shall be: Z_0 / Z_1 , where,

Z_0 = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P_0 on the Base date, and

Z_1 = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price P_0 on the Date of Adjustment.

- (c) No price adjustment shall be payable on the portion of the Contract price paid to the Contractor as an advance payment.

Appendix 3. Insurance Requirements

Insurances to be Taken Out by the Contractor

In accordance with the provisions of GCC Clause 34, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

(a) Cargo Insurance

Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefor) and to the construction equipment to be provided by the Contractor or its Subcontractors.

Amount [in US Dollars)]	Deductible Limits [in US Dollars)]	Parties insured [names]	From [place]	To [place]
110% of the contract price for the Plant and Equipment shipped	5% of the value of shipment	Employer and Contractor co-insured	Manufacturers Works	Project Site

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.

Amount [in US Dollars)]	Deductible Limits [in US Dollars)]	Parties insured [names]	From [place]	To [place]
110% of the contract price	2% of the value of the loss and /or damage	Contractor, Subcontractor plus Employer coinsured	Manufacturers Works	Project Site

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property (including the Employer's property and any parts of the Facilities that have been accepted by the Employer) occurring in connection with the supply and installation of the Facilities.

Amount [in US Dollars]	Deductible Limits [in US Dollars]	Parties insured [names]	From [Place]	To [Place]
3,000,000 USD	10% max.	contractor plus subcontractor co-insured	Project Site	Project Site

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors (whether or not owned by them) in connection with the supply and installation of the Facilities.

Comprehensive insurance in accordance with statutory requirements.

(e) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(f) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(g) Other Insurances

The Contractor is also required to take out and maintain at its own cost the following insurances:

Details:

Amount [in currency(is)]	Deductible Limits [in currency(is)]	Parties insured [names]	From [place]	To [place]
Nil	Nil	Nil	Nil	Nil

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1, except for the Third Party Liability, Workers' Compensation and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Sub-Clause 34.1, except for the Cargo, Workers' Compensation and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

Insurances To Be Taken Out By The Employer

The Employer shall at its expense take out and maintain in effect during the performance of the Contract the following insurances.

Details:

<u>Amount</u>	<u>Deductible limits</u>	<u>Parties insured</u>	<u>From</u>	<u>To</u>
---------------	--------------------------	------------------------	-------------	-----------

Appendix 4. Time Schedule

Appendix 5. List of Major Items of Plant and Installation Services and List of Approved Subcontractors

A list of major items of Plant and Installation Services is provided below.

The following Subcontractors and/or manufacturers are approved for carrying out the items of the Facilities indicated below. Where more than one Subcontractor is listed, the Contractor is free to choose between them, but it must notify the Employer of its choice in good time prior to appointing any selected Subcontractor. In accordance with GCC Sub-Clause 19.1, the Contractor is free to submit proposals for Subcontractors for additional items from time to time. No Subcontracts shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Employer and their names have been added to this list of Approved Subcontractors.

	Approved Subcontractors/Manufacturers	Nationality

Appendix 6. Scope of Works and Supply by the Employer

The following personnel, facilities, works and supplies will be provided/supplied by the Employer, and the provisions of GCC Clauses 10, 21 and 24 shall apply as appropriate.

All personnel, facilities, works and supplies will be provided by the Employer in good time so as not to delay the performance of the Contractor, in accordance with the approved Time Schedule and Program of Performance pursuant to GCC Sub-Clause 18.2.

Unless otherwise indicated, all personnel, facilities, works and supplies will be provided free of charge to the Contractor.

Personnel

Charge to Contractor (if any)

Facilities

Charge to Contractor (if any)

Works

Charge to Contractor (if any)

Supplies

Charge to Contractor (if any)

Appendix 7. List of Documents for Approval or Review

Pursuant to GCC Sub-Clause 20.3.1, the Contractor shall prepare, or cause its Subcontractor to prepare, and present to the Project Manager in accordance with the requirements of GCC Sub-Clause 18.2 (Program of Performance), the following documents for

A. Approval

1.

2.

3.

B. Review

1.

2.

3.

Appendix 8. Functional Guarantees

1. General

This Appendix sets out

- (a) the functional guarantees referred to in GCC Clause 28 (Functional Guarantees)
- (b) the preconditions to the validity of the functional guarantees, either in production and/or consumption, set forth below
- (c) the minimum level of the functional guarantees
- (d) the formula for calculation of liquidated damages for failure to attain the functional guarantees.

2. Preconditions

The Contractor gives the functional guarantees (specified herein) for the facilities, subject to the following preconditions being fully satisfied:

3. Functional Guarantees

Subject to compliance with the foregoing preconditions, the Contractor guarantees as follows:

3.1 Production Capacity

and/or

3.2 Raw Materials and Utilities Consumption

4. Failure in Guarantees and Liquidated Damages

4.1 Failure to Attain Guaranteed Production Capacity

If the production capacity of the facilities attained in the guarantee test, pursuant to GCC Sub-Clause 25.2, is less than the guaranteed figure specified in para. 3.1 above, but the actual production capacity attained in the guarantee test is not less than the minimum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities, pursuant to GCC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of _____ for every complete one percent (1%) of the deficiency in the production capacity of the Facilities, or at a proportionately

reduced rate for any deficiency, or part thereof, of less than a complete one percent (1%).

4.2 Raw Materials and Utilities Consumption in Excess of Guaranteed Level

If the actual measured figure of specified raw materials and utilities consumed per unit (or their average total cost of consumption) exceeds the guaranteed figure specified in para. 3.2 above (or their specified average total cost of consumption), but the actual consumption attained in the guarantee test, pursuant to GCC Sub-Clause 25.2, is not more than the maximum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities pursuant to GCC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of *[amount in the contract currency]* for every complete one percent (1%) of the excess consumption of the Facilities, or part thereof, of less than a complete one percent (1%).

4.3 Minimum Levels

Notwithstanding the provisions of this paragraph, if as a result of the guarantee test(s), the following minimum levels of performance guarantees (and consumption guarantees) are not attained by the Contractor, the Contractor shall at its own cost make good any deficiencies until the Facilities reach any of such minimum performance levels, pursuant to GCC Sub-Clause 28.2:

- (a) production capacity of the Facilities attained in the guarantee test: ninety-five percent (95%) of the guaranteed production capacity (the values offered by the Contractor in its Bid for functional guarantees represents 100%).

and/or

- (b) average total cost of consumption of all the raw materials and utilities of the Facilities: one hundred and five percent (105%) of the guaranteed figures (the figures offered by the Contractor in its Bid for functional guarantees represents 100%).

4.4 Limitation of Liability

Subject to para. 4.3 above, the Contractor's aggregate liability to pay liquidated damages for failure to attain the functional guarantees shall not exceed _____ percent (____ %) of the Contract price.

Performance Security Form– Bank Guarantee¹

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[insert name and Address of Employer]*

Date: *_ [Insert date of issue]*

PERFORMANCE GUARANTEE No.: *____ [Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ (hereinafter called “the Applicant”) has entered into Contract No. _____ dated _____ with the Beneficiary, for the execution of _____ (hereinafter called “the Contract”).

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (____)², such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall be reduced by half upon our receipt of:

- (a) a copy of the Operational Acceptance Certificate; or
- (b) a registered letter from the Applicant (i) attaching a copy of its notice requesting issuance of the Operational Acceptance Certificate and (ii) stating that the Project

¹ *The Employer should insert either the Bank Guarantee or the Conditional Guarantee.*

² *The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract and denominated either in the currency(ies) of the Contract or a freely convertible currency acceptable to the Employer.*

Manager has failed to issue such Certificate within the time required or provide in writing justifiable reasons why such Certificate has not been issued, so that Operational Acceptance is deemed to have occurred.

This guarantee shall expire no later than the earlier of:³

- (a) twelve months after our receipt of either (a) or (b) above; or
- (b) eighteen months after our receipt of:
 - (i) a copy of the Completion Certificate; or
 - (ii) a registered letter from the Applicant, attaching a copy of the notice to the Project Manager that the Facilities are ready for commissioning, and stating that fourteen days have elapsed from receipt of such notice (or seven days have elapsed if the notice was a repeated notice) and the Project Manager has failed to issue a Completion Certificate or inform the Applicant in writing of any defects or deficiencies; or
 - (iii) a registered letter from the Applicant stating that no Completion Certificate has been issued but the Employer is making use of the Facilities; or
- (c) the ____ day of ____, 2____.⁴

³ This text shall be revised as and where necessary to take into account (i) partial acceptance of the Facilities in accordance with Sub-Clause 25.4 of the GCC; and (ii) extension of the Performance Security when the Contractor is liable for an extended warranty obligation pursuant to Sub-Clause 27.10 of the GCC (although in this latter case the *Employer* might want to consider an extended warranty security in lieu of the extension of the Performance Security).

⁴ Insert the date twenty-eight days after the expected expiration date of the Defect Liability Period. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

Performance Security Form- Conditional Bank Guarantee

Date: _____

Loan/Credit N°: _____

RFB N°: _____

To: _____

Dear Ladies and/or Gentlemen,

We refer to the Contract Agreement ("the Contract") signed on [date] between you and _____ ("the Contractor") concerning design, execution and completion of _____.

By this letter we, the undersigned, [name of Bank], a Bank (or company) organized under the laws of _____ and having its registered/principal office at _____, do hereby jointly and severally with the Contractor irrevocably guarantee payment owed to you by the Contractor, pursuant to the Contract, up to the sum of _____, equivalent to _____ percent (%) of the Contract Price until the date of the Operational Acceptance Certificate and thereafter up to a sum of _____, equivalent to _____ percent (%) of the Contract Price, until twelve (12) months after the date of Operational Acceptance, or eighteen (18) months after Completion of the Facilities, whichever comes first.

Where it is agreed between you and the Contractor that the Facilities are to be accepted in parts, and thus where there are separate Completion and Operational Acceptance Certificates for each part, this Letter of Guarantee shall be apportioned to the value of each such part and shall reduce or expire as provided above on or following Completion or Operational Acceptance of each part.

We shall only undertake to make payment under this Letter of Guarantee upon our receipt of a written demand signed by your duly authorized officer for a specified sum, where such demand sets out the reasons for your claim under this Letter of Guarantee and is accompanied by

- (a) a copy of the written notice sent by you to the Contractor before making the claim under this Guarantee, specifying the Contractor's breach of contract and requesting the Contractor to remedy it
- (b) a letter signed by your duly authorized officer certifying that the Contractor has failed to remedy the default within the period allowed for remedial action
- (c) a copy of your written notice to the Contractor stating your intent to claim under this Letter of Guarantee because of the Contractor's failure to remedy the default in accordance with the request referred to in para. (a) above.

Our liability under this Letter of Guarantee shall be to pay to you whichever is the lesser of the sum so requested or the amount then guaranteed hereunder in respect of any demand duly made

hereunder prior to expiry of this Letter of Guarantee, without being entitled to inquire whether or not this payment is lawfully demanded.

This Letter of Guarantee shall be valid from the date of issue until the earlier of twelve (12) months after the date of Operational Acceptance or eighteen (18) months after the date of Completion of the Facilities or, where the Facilities are to be accepted in parts, twelve (12) months after the date of Operational Acceptance or eighteen (18) months after the date of Completion of the last part or [date], whichever comes first.

Except for the documents herein specified, no other documents or other action shall be required, notwithstanding any applicable law or regulation.

If the Defect Liability Period is extended with respect to any part of the Facilities in accordance with the Contract, you shall notify us, and the validity of this Letter of Guarantee shall be extended with respect to the percentage of the Contract Price stipulated in the notification until expiry of such extended Defect Liability Period.

Our liability under this Letter of Guarantee shall become null and void immediately upon its expiry, whether it is returned or not, and no claim may be made hereunder after such expiry or after the aggregate of the sums paid by us to you shall equal the sums guaranteed hereunder, whichever is the earlier.

All notices to be given hereunder shall be given by registered (airmail) post to the addressee at the address herein set out or as otherwise advised by and between the parties hereto.

We hereby agree that any part of the Contract may be amended, renewed, extended, modified, compromised, released or discharged by mutual agreement between you and the Contractor, and this security may be exchanged or surrendered without in any way impairing or affecting our liabilities hereunder without notice to us and without the necessity for any additional endorsement, consent or guarantee by us, provided, however, that the sum guaranteed shall not be increased or decreased.

No action, event or condition which by any applicable law should operate to discharge us from liability hereunder shall have any effect and we hereby waive any right we may have to apply such law, so that in all respects our liability hereunder shall be irrevocable and, except as stated herein, unconditional in all respects.

Yours truly,

Authorized Signature

Advance Payment Security

Demand Guarantee

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *Name and Address of Employer*

Date:*[Insert date of issue]*.....

Advance Payment Guarantee No.:*[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

.....
We have been informed that (hereinafter called “the Applicant”) has entered into Contract No. dated with the Beneficiary, for the execution of, (hereinafter called “the Contract”).

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum (.) is to be made against an advance payment guarantee.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of . (.)⁵ upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the applicant:

- (a) has used the advance payment for purposes other than the costs of mobilization in respect of the Facilities; or
- (b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

⁵*The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.*

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been credited to the Applicant on its account number _____ at _____..

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of documentation indicating full repayment by the Applicant of the amount of the advance payment, or on the . . . day of⁶, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

_____ [signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

⁶Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."